ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

It rains in Churubusco, too!

As in every community, Churubusco, Indiana, has to drain storm water and sanitary sewage. In 1937 they installed a combined sewer outfall. Part of the line was Armco PAVED-INVERT Pipe.

When inspected in 1950 the Armco PAVED-INVERT Pipe showed no evidence of deterioration despite having carried highly erosive effluent. In contrast other material installed at the same time was severely eroded.

This is a graphic example of why Armco engineers developed PAVED-INVERT Pipe more than 25 years ago. It means balanced design that provides extra protection where the wear is greatest — is added assurance of obtaining full value from your drainage investment.

Providing better products to meet specific needs has been standard practice at Armco for more than 40 years. A few examples are FLEX-BEAM Guardrail, PIPE-ARCH, STEELOX Buildings and sturdy MULTI-PLATE Bridges.

Today you can bring your drainage and construction problems to Armco with full assurance you will receive all the benefits of long experience, extensive research facilities, and a real interest in helping you solve these problems.

Armco has a complete range of engineered products and convenient, authoritative data to help you. If your problem is difficult or unusual, why not talk it over with us?

ARMCO

ARMCO DRAINAGE & METAL PRODUCTS, INC.

MIDDLETOWN, OHIO • OFFICES AND PLANTS IN PRINCIPAL CITIES

SUBSIDIARY OF ARMCO STEEL CORPORATION

Structural Plate Pipe and Arches ★ Corrugated Metal Pipe ★ Welded Steel Pipe FLEX-BEAM Guardrail ★ Water Control Gates ★ Retaining Walls ★ STEELOX Buildings Sheeting ★ Tunnel Liner ★ Subdrainage Pipe ★ End Sections ★ Pipe Piling and Pile Shells

B.F.Goodrich

The tire that should lose but doesn't

WHEN water, sharp rocks and rubber start fighting—it's usually the tire that has the handicap. The water acts as a lubricant, causing the tires to spin — while the sharp rocks cut at the slipping rubber.

But the BFG Rock tires shown above are an example of how B. F. Goodrich builds tires to lick tough problems.

To resist cutting, these tires have a special, tough tread—compounded for rock service. To resist slippage, the heavy cleats on the shoulders are non-directional . . . they dig in for a non-slip bite, in forward or reverse. To give real shock protection to the cord body, these and other B. F. Goodrich off-the-road tires have a patented *nylon shock shield* (double in larger sizes).

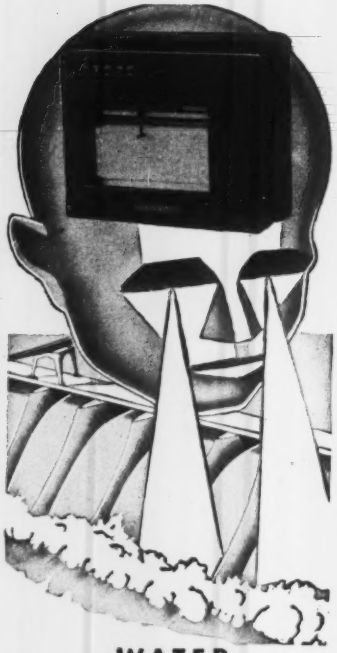
Found only in BFG tires, the shock shield is made of two nylon cord breakers. This is vulcanized between the tread and cord body to protect the life of the tire against the shocks of hard service.

The Wallowa County Road Department office in Enterprise, Oregon, operators of the equipment shown above, have this to report: "The B. F. Goodrich tires have given longer and better all-around service than any other brand we have used." In other words, the tire that's hard to cut is the tire that cuts costs.

Whatever job your off-the-road equipment must perform, there's a special BFG tread built to help you do it better. In addition, you get the exclusive protection of the nylon shock shield at no extra cost.

So see your B. F. Goodrich dealer. And specify BFG tires for your new equipment. Enjoy the longer life and lower operating costs offered you by *The B. F. Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS
B.F.Goodrich
FIRST IN RUBBER



WATER
MEASUREMENT
OR CONTROL

STEVENS

GRAPHIC, VISUAL OR
AUDIBLE REGISTRATION

Whether you need a simple staff gage, float gage or complex remote operated recorder, there is a STEVENS instrument to meet your requirements. Water level or flow recorders for weekly service or long periods of unattended operation, direct float operated or remotely controlled; indicators, controls for alarms and pumps... the STEVENS line is complete in the field of water measurement and control. We also welcome inquiries concerning special problems.

Pioneers in the field of water level recording for more than 43 years, LEUPOLD AND STEVENS INSTRUMENTS, INC., have developed and perfected precision water measuring instruments of all types to meet a variety of specific needs, especially for water works, sewerage, irrigation and industrial uses.

Write for literature and information on accurate and dependable STEVENS *water measuring instruments.*

LEUPOLD AND STEVENS
INSTRUMENTS, INC.
PORTLAND 13, ORE., U. S. A.

ENGINEERING NEWS-RECORD

Member

Volume 146 — MAY 24, 1951 — No. 21

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

Nebraska seeks more durable concrete.....W. H. Palmer 28
Miles of underpinning for Toronto's subway.....G. Goodwin 30
India's TVA .....W. G. Bowman 33
How much pollution can a river take?..... 38
British oil dock incorporates unusual fenders, foundations..... 42
No program break as radio tower is lifted..... 42
Perspective—Letter from Jacksonville..... 144

DEPARTMENTS

Construction Week 17
Construction Trends..... 19
Editorials 21
News of the Week..... 23
Reader Comment 47
Field and Office..... 50
Foreign 52
Municipal 56
Men and Jobs..... 62
Education, Research..... 68
Meetings 71
Obituaries 75
Labor 76
Construction Business 79
Unit Prices..... 88
Construction Reports 92
New Products..... 133

Number of copies of this issue printed 47,903

Managing Editor—Eugene E. Halmos, Jr.
Associate Editors—*New York*, V. T. Boughton (senior associate), I. F. Angstadt, R. H. Dodds, F. S. Merritt; *Chicago*, J. R. Carr; *San Francisco*, L. L. Wise; *Washington*, W. B. Smith.
Assistant Editors—*New York*, Melvin Dean, Arthur J. Fox, Jr., T. D. MacGregor, D. E. Reilly.
Staff Assistants—Mary Kiernan, *Research*; Ethel Lyon, *Makeup*; Leo Tarpey, *Printing*; Louise Barker, Madalene Smith, *Editorial*.
Business News—Elsie Eaves, *Manager*, E. M. Huber, Ruth Meyer, J. A. Mahoney, M. W. Roessler, M. Wetzel.
Contributing Editor—N. A. Bowers.
Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.
Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City. *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. BOGER
Publisher

May 24, 1951 — ENGINEERING NEWS-RECORD — Vol. 146—No. 21
Member ABC and ABP

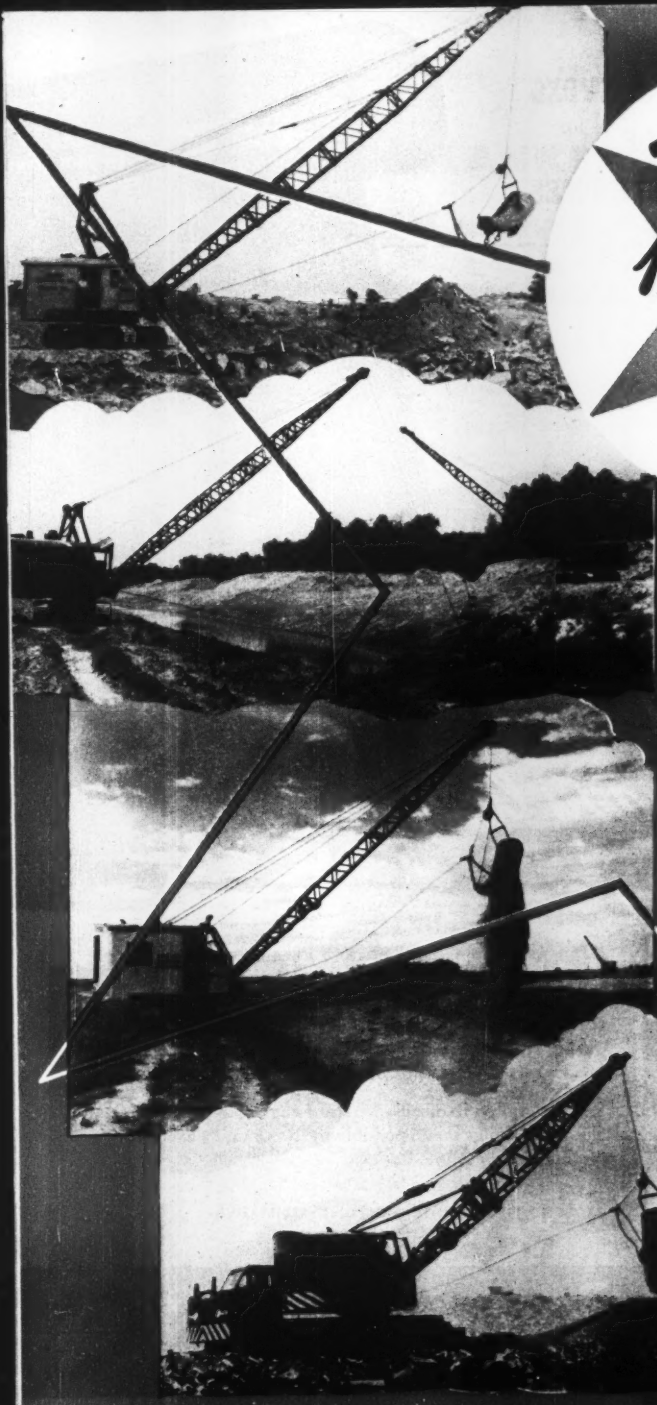
Published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. **Publication Office, 99-129 North Broadway, Albany 1, N. Y.**

Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., N. Y. 18, N. Y. Curtis W. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions: Address correspondence to Engineering News-Record—Subscription Service, 99-129 N. Broadway, Albany, N. Y., or 330 W. 42nd St., New York 18, N. Y. Allow ten days for change of address.

Please indicate position and company connection on all subscription orders.

Single copies 35c. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. Canada, $8.00 a year; $12.00 for two years; $16.00 for three years. Pan American countries, $10.00 a year; $16.00 for two years; $20.00 for three years. All other countries, $20.00 a year; $30.00 for two years; $40.00 for three years. Entered as second class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of Mar. 3, 1879. Printed in U. S. A. Copyright 1951 by McGraw-Hill Publishing Co., Inc.—All Rights Reserved.



The star performer on every dragline job!

What's your dragline job? How much travel? What size ditch—how much overburden—how much reach—how much output? The Northwest range of Dragline Capacities and features of design give you the greatest combination of advantages of any equipment of this type on the market. You'll find the Northwest Crawler capable of more miles of travel—without trouble. Positive traction on both crawlers when [illegible] as well as when going straight ahead—a feature of the larger Northwest [illegible] the need for mats with big machines.

The "Feather-Touch" Clutch control gives easy operation without the complications of [illegible] mechanism and needs no service specialists to take care of it. Uniform Free Swing Clutches give a smooth swing free from jerks and grabs that strain men and machines. The Cushion Clutch eliminates the shock overloads that they can damage machinery. Every [illegible] means better and smoother operation, faster and more economical running and greater profits. Remember, your dragline is essentially working all the time it's on the job. You can't afford anything but the best and if you have a Northwest you have the Star performer for any Dragline job. There is a size for every problem.

NORTHWEST ENGINEERING CO.
[illegible] Field Building
135 South LaSalle Street, Chicago 3, Illinois

WEIGH ALL THE ADVANTAGES

NORTHWEST SHOVEL, CRANE, DRAGLINE, PULLSHOVEL or TRUCK CRANE
a size for every job!

NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS-CRANES-DRAGLINES-PULLSHOVELS

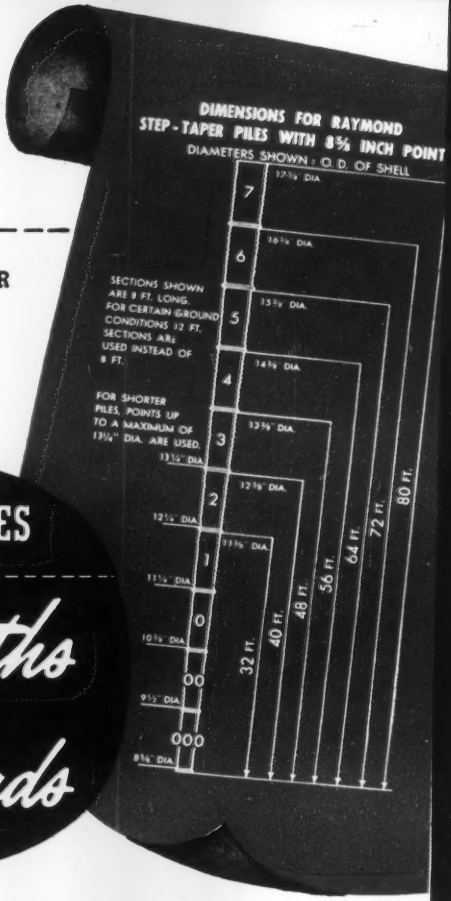
Raymond

MAKES 5 TYPES OF CONCRETE PILES

1. STANDARD . . . 2. STEP-TAPER . . . 3. PIPE STEP-TAPER

4. COMPOSITE . . . 5. GOW CAISSONS

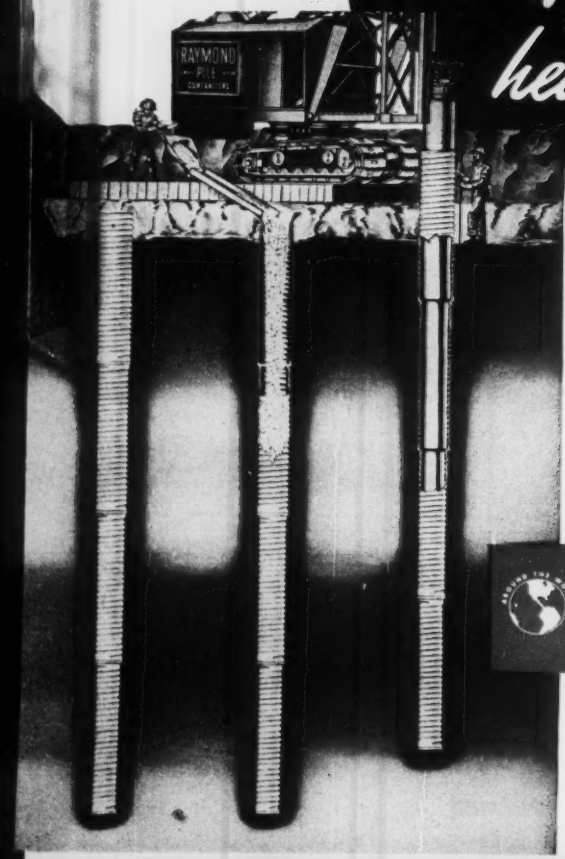
Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements, and cement mortar lining of oil and water pipe lines 4" to 144" in diameter by the Centriline Corporation, a Raymond subsidiary.



2. STEP-TAPER PILES

FOR *long lengths* WITH *heavy loads*

At left, completed Step-Taper Pile. Center, filling the permanent steel shell with concrete after internal inspection. Right, driving the pile with rigid core.



Raymond Step-Taper Concrete Piles driven with rigid steel cores and heavy hammers are designed to develop high load-carrying capacities at depths to 80 feet. The permanent steel shell maintains the resistance developed during driving. After the shell is inspected internally, it is filled with concrete and cut off at the specified elevation.

You are invited to discuss with our engineers the efficiencies and savings made possible by Raymond's exclusive, original concrete pile designs.

◀ RAYMOND PILES MAINTAIN DRIVING RESISTANCE

Raymond CONCRETE PILE CO.

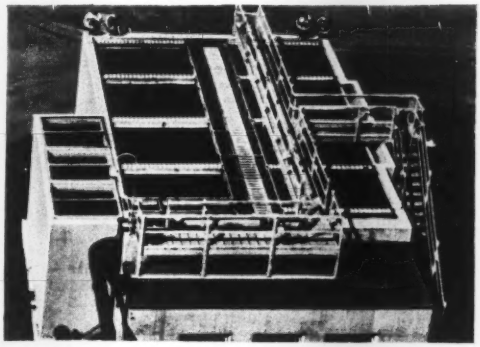
140 CEDAR ST., NEW YORK 6, N. Y.

BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Salt Lake City, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America.

53 YEARS OF PROGRESS

SLUDGE BLANKET

fresh and active at all times!



● **Operating on the principles of precipitation, adsorption, settling and upward filtration, the Permutit Precipitator lends itself to a variety of applications besides softening: removal of turbidity, color, taste, odor, alkalinity, silica, and fluorides.**

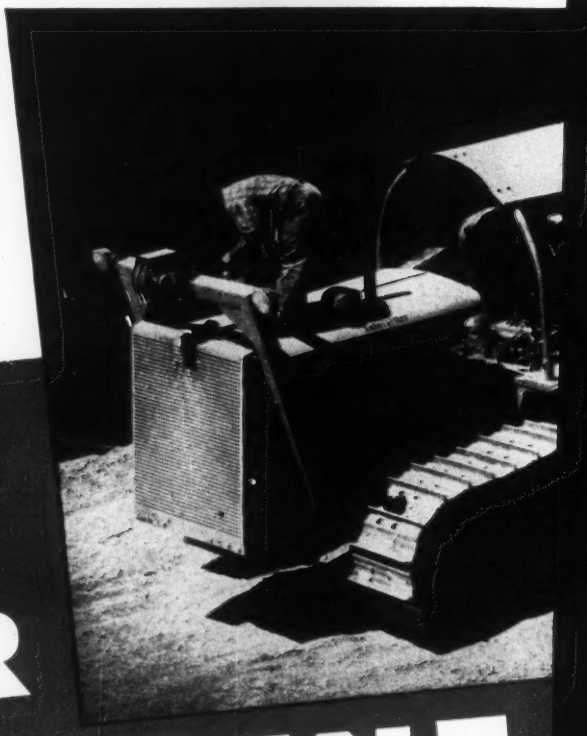
Write for full information to The Permutit Company, Dept. ENR 5, 330 West 42nd Street, New York 18, N. Y., or to Permutit Company of Canada, Ltd., 6975 Jeanne Mance Street, Montreal.

Permutit®

Water Conditioning Headquarters for over 38 years

IMPORTANT OPERATING ADVANTAGES:

1. Saves you up to 50% in space
2. Saves you up to 40% in chemicals
3. Saves you up to 75% in time
4. Short detention time
5. Uniform sludge filter
6. No settling of precipitates
7. High adaptability to variable flow rates



● Contractor's lubrication truck servicing equipment on road-building job in Oregon. Texaco products are used exclusively . . . *Texaco Ursa Oil X*** for engine lubrication, *Texaco Marfak* for chassis lubrication, *Texaco Marfak Heavy Duty* for wheel bearings, *Texaco Track Roll Lubricant,* and others.

KEEP YOUR EQUIPMENT

. . . Service it with Texaco Lubricants

TUNE IN . . .
TEXACO STAR THEATER
starring MILTON BERLE
on television
every Tuesday night.
See newspaper for
time and station.

TEXACO

TEXACO

ON THE JOB

MAINTENANCE costs and fuel consumption both come down when you lubricate engines—Diesel or heavy-duty gasoline—with *Texaco Ursa Oil X***. In addition, you'll get full power . . . more work and less downtime.

*Texaco Ursa Oil X*** is the fully detergent and dispersive oil with extra resistance to oxidation. It cleans as it lubricates . . . keeps rings free for proper compression and combustion. *Texaco Ursa Oil X*** stands up in the severest service . . . protects bearings from corrosion . . . assures longer parts life.

Use These Other Cost-Reducers, Too

To bring down chassis maintenance costs, use *Texaco Marfak*. It's longer lasting—won't jar or squeeze out of bearings. Protects against dirt, rust and wear. *More than 400 million pounds of Marfak have been sold!*

Assure longer wheel-bearing life by lubricating with *Texaco Marfak Heavy Duty*. It stays *in* the bearings, off the brakes. Greater safety—no seasonal change required.

Guard crawler track mechanisms against dirt, water and wear by lubricating with *Texaco Track Roll Lubricant*. Reduces maintenance costs.

Let a Texaco Lubrication Engineer show you how you can reduce costs with Texaco lubricants and the Texaco Simplified Lubrication Plan calling for only six lubricants to handle all major requirements. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

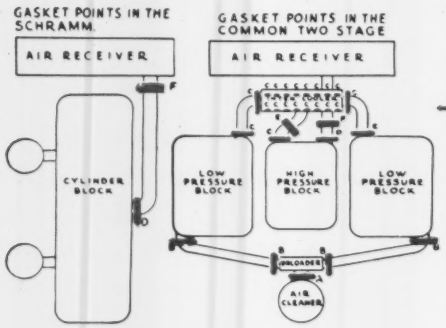
REDUCE AIR COMPRESSOR MAINTENANCE

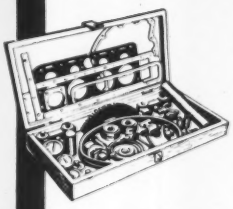
. . . And Save Man Hours and Dollars!

SCHRAMM AIR COMPRESSORS offer not one, but *three* ways to reduce compressor maintenance. From each you effect great savings . . . savings provided by SCHRAMM exclusively . . . savings that result from service.

SIMPLIFIED DESIGN

None of the complications of the two-stage air compressor . . . fewer parts . . . up to 90% of the parts interchangeable between engine and compressor and between sizes of compressors . . . controls all on one side for easy accessibility, easy service.



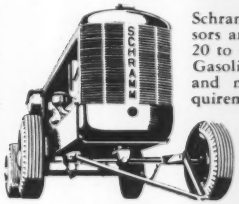


SERVICE KITS

Only Schramm has available service kits for each compressor. Kits contain those parts most likely needing replacing, based on actual checking through years of experience. Big advantage: for emergency use, reducing "shut-down" time when there may be delay in reaching the Dealer. Also in combat zones, and remote sections of the world. Truly, a "Preventive Insurance."

DEALER SERVICE

Schramm dealers are world-wide, *qualified*. Practically every serviceman is factory trained, to know *your* Schramm as he does his right hand. Dealers carry stocks of machinery and parts, and Service Kits, for easy, quick delivery.



Schramm Engine Driven Compressors are built in sizes ranging from 20 to 600 cu. ft. actual air delivery. Gasoline and Diesel engine drive and mountings to suit every requirement.

THINK OF THESE THREE WAYS Schramm Service can help you!

You are familiar with our complete line of versatile air compressors, which offer many exclusive advantages, but when you specify SCHRAMM you are in a position to *save further* by taking advantage of our carefully-planned *service*. For the many details which make SCHRAMM your best air compressor buy, write us today.

SCHRAMM INC.

THE COMPRESSOR PEOPLE · WEST CHESTER · PENNSYLVANIA

NEWS BRIEFS

While the city sleeps—Montreal will allow certain contracting firms engaged in civic projects to carry on their work at night provided they are quiet about it. Atlas Construction Co., Ltd., got permission to work from 10 p.m. to 7 a.m. on the laying of a branch sewer on condition that no dynamiting be done. On the same condition, night work permission was also given to the Armco Drainage and Metal Products Co. constructing a tunnel at Atwater Ave. and Notre Dame St.

War on roadside signs—New Hampshire's State Highway Department has opened a war on roadside advertising signs, and a number of Nashua merchants and business firms have been notified to move back their signs or have them torn down. The warning notice was the first step in the highway department program to eliminate unsightly roadside signs and those located on highway rights-of-way. On the Daniel Webster Highway, the right-of-way is 100 ft wide and signs must be back at least 35 ft from the edge of the concrete.

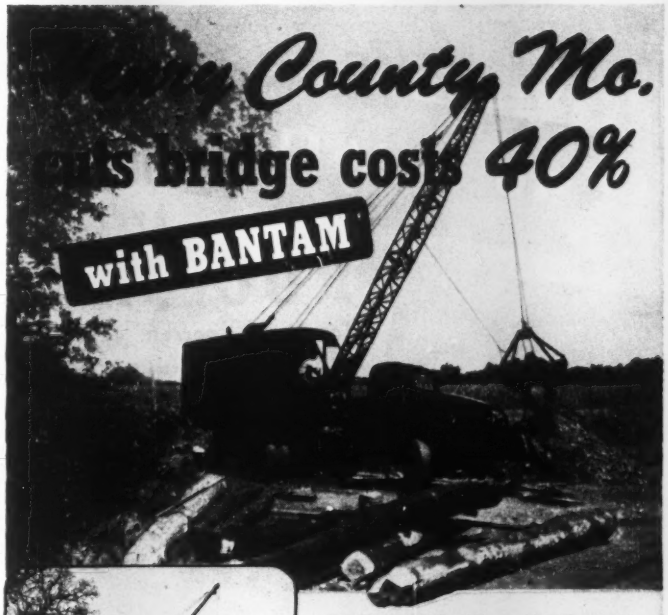
A lot of bridges—On the 41,000-mile road system of the state of Pennsylvania there are 20,357 bridges of various types, not counting any less than 8 ft in length.

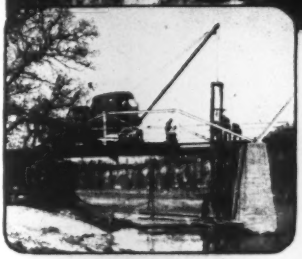
Free sewers—Phoenix, Ariz., recently discovered that it had furnished free sewerage service to 122 suburban home owners since June, 1950. Normally, there is a $2.50 per month charge for residences outside the city limits. No record of the connections having been made were in the city files, and no city officials could tell under what circumstances the sewer connections had been put in.

Tough nut to crack—The Oklahoma Turnpike Authority is now set to evaluate the worth of a pecan tree of which there are many on the right-of-way being obtained for the 88-mi Oklahoma City-Tulsa toll road under construction at an estimated cost of $31,000,000. A group of research experts at Oklahoma A & M college have come up with a 6-page report advising Manager H. E. Bailey how to decide what a pecan tree is worth.

School district rivalry—Two school districts in New Jersey are openly competing for the privilege of building a $2,500,000 school house for the education of children of Army and Air

(*Continued on page 10*)





Keeps going 2400 hours —*without repairs!*

Despite gruelling work schedule of 8 hrs. a day, 6 days a week, only Bantam maintenance has been for cable replacement, according to Engineer Parker. You, too, can cut costs with Bantams. Act now!

Builds *85 bridges in 1 year* with mobile clam-pile driver

Hal Parker, County Engineer, Clinton, Mo., saw an opportunity early last year to cut costs by mechanizing Henry County's Bridge Dept. with a low-cost Bantam clamshell on rubber tires. Parker used fast-working Bantam clam to dig foundations . . . switched to 1200 lb. hammer for driving piling . . . employed rugged 30' boom for pouring concrete buckets weighing 750 lbs. per load. This new Bantam method enabled Parker to service 750 sq. mi. of roadways . . . complete 85 small bridges in 12 months at record low cost.

Clip . . . Mail today!

SCHIELD BANTAM CO., 201 Park St., Waverly, Iowa SB-C-9

Send details on truck-mounted Bantam

☐ Shovel ($6195)* ☐ Pile Driver ($6110)* ☐ Dragline ($5940)*

☐ Hoe ($6040)* ☐ Crane ($5520)* ☐ Clamshell ($6080)*

Title

Name

Company

Address

City State

*Less truck, F.O.B. Waverly, Iowa. Prices subject to change without notice.

SCHIELD BANTAM

Costs less — goes anywhere fast

GETS MORE JOBS DONE

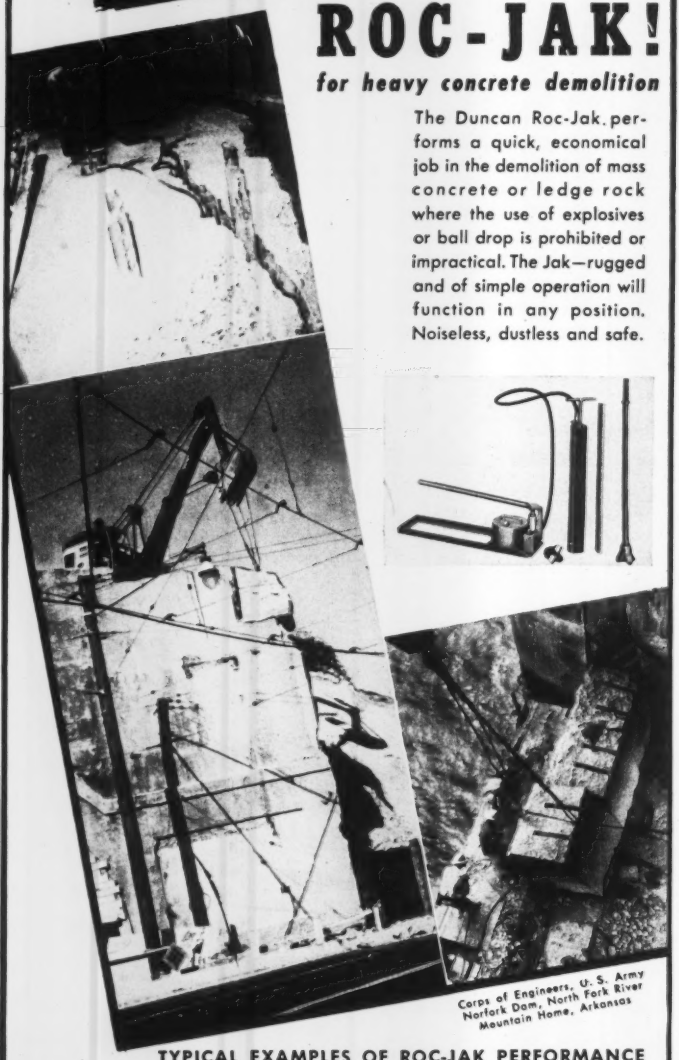
when the man says

NO BLASTING use a DUNCAN hydraulic

ROC-JAK!

for heavy concrete demolition

The Duncan Roc-Jak performs a quick, economical job in the demolition of mass concrete or ledge rock where the use of explosives or ball drop is prohibited or impractical. The Jak—rugged and of simple operation will function in any position. Noiseless, dustless and safe.



Corps of Engineers, U. S. Army
Norfork Dam, North Fork River
Mountain Home, Arkansas

TYPICAL EXAMPLES OF ROC-JAK PERFORMANCE

Write for bulletin and price

K. O. DUNCAN

1350 Wright Street, Los Angeles 15, Calif.

Force personnel stationed at Fort Dix and Maguire Air Base. Mayor Edwin L. Davis of Wrightstown, N. J., has carried the claim of the New Hanover-Wrightstown school district all the way to Assistant Secretary of the Army Archibald S. Alexander. He insists that Wrightstown is the logical place to build the proposed 50-room school house since it adjoins the Fort Dix military reservation. Meanwhile, school officials in Pemberton—six miles from Fort Dix—are urging the Army to renew its present contract with that school district which calls for the education of post and air base children at a rate of $100 per child per year. The New Hanover-Wrightstown district has only 915 children enrolled, but the proposed expansion of Fort Dix and Maguire Air Base would boost the school population to an estimated 1,915.

The Federal government is expected to put up all but $25,000 of the $2,500,000 needed to construct a 50-room school house.

Disused suspension bridge—One of the earliest suspension bridges in the Midwest still reaches majestically across the Kaskaskia River at Carlyle, Ill., but its cables have not strained to the pressure of vehicles for some 30 years. Today its heavy cables of bound wire, although deeply rusted, still hang securely.

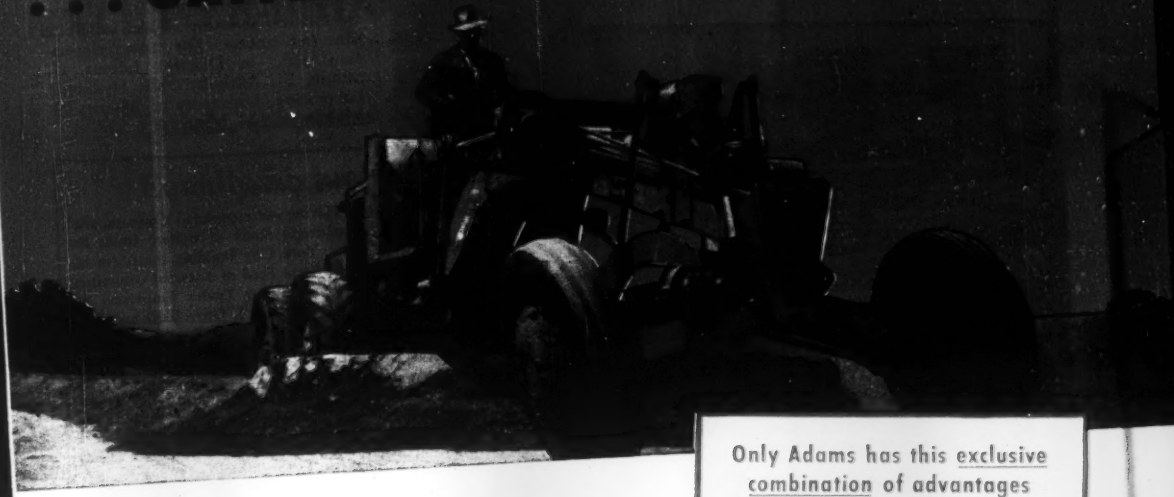
The bridge's supporting towers still stand, but the bridge flooring has all rotted out and fallen into the river. When a new concrete highway bridge was built in 1920, just a few yards down the river, the suspension bridge was abandoned. Griffin W. Smith, a contractor and builder from Pennsylvania, constructed the bridge at a cost of $45,000. The brick towers suporting the cables are 32 ft high, and the stone abutments extend 16 ft into the ground. The length of the span is 280 ft.

Quick crossing—Colorado's Highway Department may be strapped for cash for emergency construction, but it "does its darndest" to meet its citizens half way when a crisis arises. A weed fire ignited a 1000-ft. wooden bridge over a dry wash called Bijou Creek, four miles east of Strasburg, Colo. This was tough luck for citizens along U. S. Highway 36, in both Colorado and Kansas because it meant detouring to Byers, Colo., to get across Bijou, and then a narrow road with sharp curves to get back onto U. S. 36. Colorado Highway Engineer Mark Watrous told the citizens he didn't have money to build a new bridge, but hinted that if the citizens them-

(Continued on page 12)

Adams Motor Graders

. . . GAITED FOR TOP PERFORMANCE



8 overlapping forward speeds insure the right working speed for every grading operation . . . Adams Motor Graders give you 2 more forward speeds than several machines of comparable size and power—8 forward speeds instead of 6.

These 2 additional speeds give you an extra working speed and a higher "high"—up to 25 mph. This means greater selectivity of speeds on all types of work—an exactly *right* speed for accomplishing each grader operation at the fastest practical rate . . . plus 30 to 50% faster job-to-job transport.

Let your local Adams dealer show you how 8 forward speeds—and the other big Adams advantages—speed operations, increase efficiency, reduce costs.

Only Adams has this exclusive combination of advantages

- **8 Overlapping Forward Speeds**...Flexible working range speeds work—increases output—provides high transport speeds.
- **Wide Range of Blade Positions**—Without Mechanical Adjustments . . . Saves Time in Adapting Machine to Needed Cuts.
- **Positive-Action Mechanical Controls** . . . Dependable, accurate adjustments—because they're geared . . . Easy, natural steering.
- **Ample Operating Clearances**...Quick, easy adaptation to work . . . Operator comfort, convenience, efficiency.
- **Fast, Easy, Servicing Plus World-Wide Dealer Service** . . . Saves time and money.

Make your next motor grader an

ADAMS

How Florida SAVES TIME and MONEY on BRIDGE MAINTENANCE

Idea for YOU!

To speed repair of damaged bridges, Florida's State Road Department developed this mobile maintenance unit, including completely equipped machine shop, mounted on a *10-ton La Crosse low bed trailer*. Outfit carries everything from sledges to 24" lathe, welder, compressor, generator, grinders, burners, etc. *A 25-ton La Crosse low boy* with 3-ton crane and 30,000 lb. winch is also used for hauling and placing heavy bridge materials. Florida now operates three such mobile repair units, called "indispensible", by Maintenance Engineer E. C. DeGarmo. You, too, can speed work, cut costs by "mobilizing" your equipment on job-proved LaCrosse trailers . . . 6 to 67 tons capacity . . . single, dual or tandem axle . . . custom-built to your specific needs.

LC-18

Check Today!

LA CROSSE TRAILER CORPORATION, La Crosse, Wis.

☐ Rush complete information on La Crosse trailers:
☐ Specifications ☐ Prices ☐ Delivery
☐ Send name of nearest La Crosse Distributor.
☐ We may buy a ..... ton trailer about .....
(date)

Name.....Title.....
Employed by.....
Address.....
City.....State.....

LaCROSSE
America's Favorite **LOW BED TRAILER**

selves could dig up half the cost he'd scrape together the balance needed. The citizens collected $3,960.77. Watrous then did his part. A "fill" now takes the place of the burned bridge until permanent arrangements can be made.

Hydraulic research assistants—The St. Anthony Falls Hydraulic Laboratory of the University of Minnesota has openings available for qualified graduate students interested in advanced studies in theoretical and applied hydraulics and fluid mechanics—half-time work and a monthly stipend of $112 plus free tuition. For more information write to Director Lorenz G. Straub, St. Anthony Falls Hydraulic Laboratory, University of Minnesota, Minneapolis 14, Minn.

The Cover

Having just completed a monumental (162-page) study of welfare funds for New York City building trades (in his capacity as head of a special committee of the Building Trades Employers Association), Fred J. Driscoll can now take time out to devote to his own booming construction business.

Not full time, though. A leader in his own business, he's also a man who delights in keeping half a dozen other interests flashing in the air with never a sign of strain or lack of attention to any detail. For instance:

He's the 1951 president of BTEA; has been chairman of the organization's wage stabilization committee; is a member and former president of the Building Contractors and Mason Builders Association of New York; is a trustee of The Moles; a member of the board of governors of the New York Building Congress; a director of the Lafayette National Bank of Brooklyn; and a deputy civilian defense director for New York City.

As president of the George F. Driscoll Co., general contractors (founded by his father in 1902), since 1941, he has overseen $89,000,000 worth of airfield construction in Trinidad and the West Indies; $35,000,000 worth of multifamily apartment projects for the New York City Housing Authority; offices and a hotel in Caracas, a housing development at Amuay, Venezuela. The firm is now working on a $7,000,000 office building in Caracas; the Hunt's Point Sewage Treatment Plant for New York City; a science building at Manhattan College, and many other jobs.

Married and father of two daughters and a son, 49-year-old Driscoll is a subway commuter from the Kew Gardens section of Queens to his offices on 42d street in Manhattan.

OPERATION FLEXIBILITY

A CLEAVER-BROOKS STEAM BOILER GIVES YOU:

✓Quick, effortless response to fluctuating steam demands.

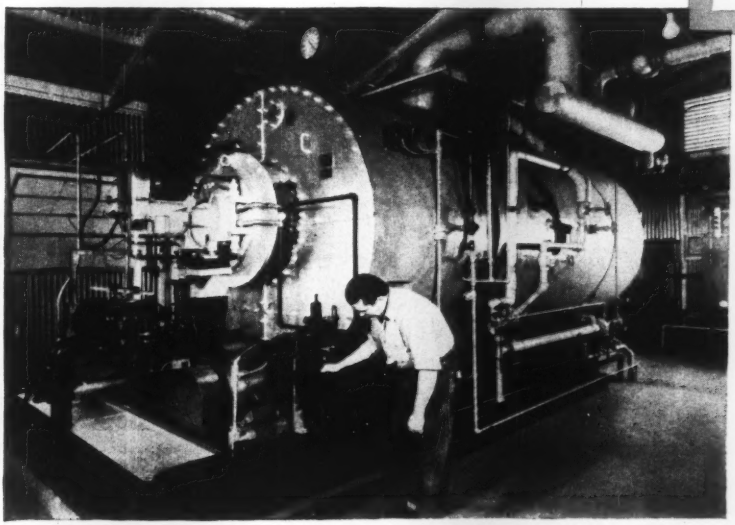
✓Equally high efficiency (80%) operating with oil or gas.

Fluctuating steam loads are no problem when you have a custom-planned Cleaver-Brooks boiler in your plant. Whether your demand is heavy or light, steady or variable, these sturdy heavy-duty boilers respond instantly to your steam needs. Even with loads as low as 30% of rating, Cleaver-Brooks boilers operate with a flat 80% efficiency.

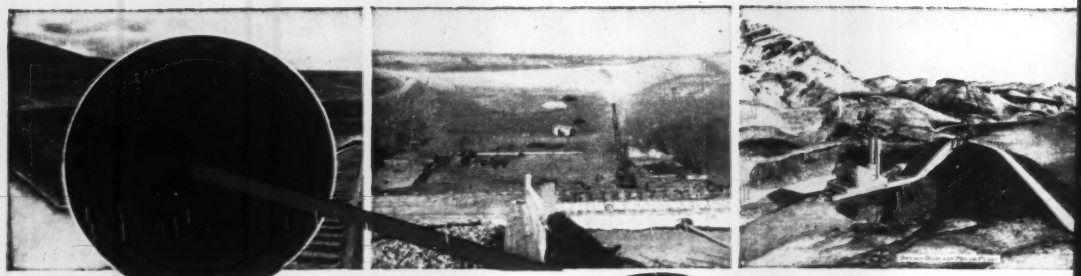
Cleaver-Brooks boilers burn either oil or gas . . . either fuel is properly proportioned to meet your steam demand and need. No banking of fires or loss of valuable heat during low load periods. You benefit with lower fuel bills, less maintenance, reduced operating costs.

If you are considering a change in your present boiler plant—think about flexibility — and get the complete facts about Cleaver-Brooks custom-planned boilers. Cleaver-Brooks self-contained boilers 15 to 500 HP, 15 to 250 lbs., p. s. i. — oil, gas, combination oil and gas firing. CLEAVER-BROOKS COMPANY, 389 East Keefe Avenue, Milwaukee 12, Wisconsin.

Cleaver-Brooks
STEAM BOILERS
the first and finest of their class



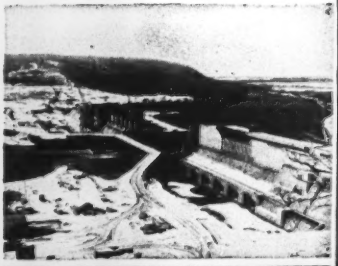
Write for a Cleaver-Brooks Steam Boiler Catalog.

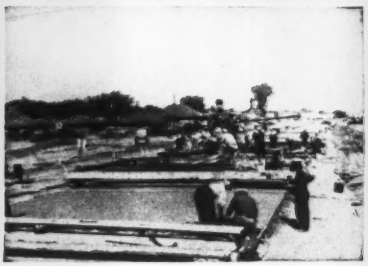


Protex

America's leading air entraining solution

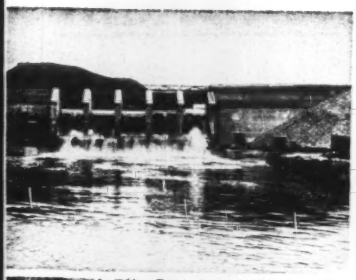
is used on more large projects (and many smaller ones) throughout the world, because Protex concrete is more durable, easier to place and more workable.

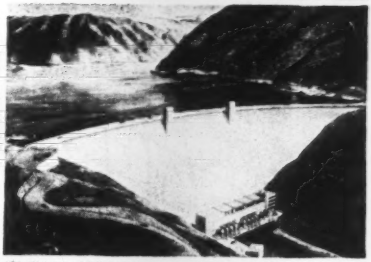


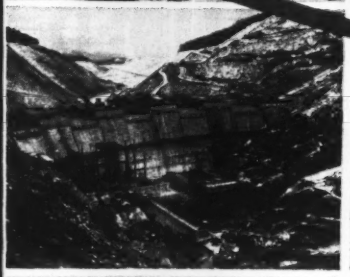


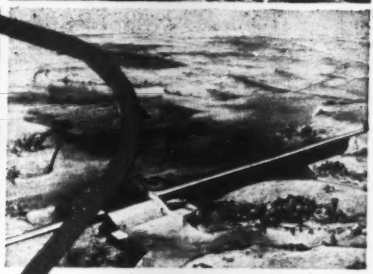
Specify... always buy... Protex Air Entraining Solution

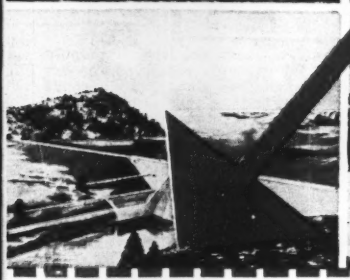
DISTRIBUTED BY Arnold Machinery Co., Salt Lake City, Utah • Adler Steel Products Co., Minneapolis, Minn. • P. L. Crooks & Co., Portland, Ore. • Equip. Co., Kansas City, Mo. • Horner, Jones & McKnight, Chicago, Ill. • Townsco Equip. Co., Oklahoma City and Tulsa, Okla. • Western Equip. Co., Twin Falls, Idaho • Buchanan-Rooney Equip. Co., Nashville, Tenn. • Seaber & Aiken, Columbia, S. C. • Bound Brook Supply Co., Boun Co., St. Louis, Mo. • Missouri Valley Industrial Corp., Bismark, N. D. • Building Specialties Supply, Phoenix, Ariz. • Western Tractor & Equip. Co., Regina.

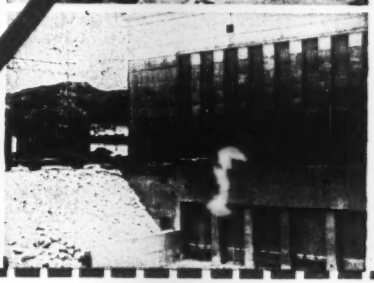












This is a partial list of Protex projects:

Morrison Knudsen Co., Inc.,
Shoshone, Wyo.
Boysen Dam, U. S. Bureau of Rec.
Johnson Winston Kiewit Contractors,
Fort Gibson, Okla.
Fort Gibson Dam (490,000 yds.)
U. S. Corps of Engineers
Morton Construction Co., Alma, Nebr.
Norton County Dam (430,000 yds.)
U. S. Corps of Engineers
Al Johnson Construction Co.,
Denver, Colo.
Cherry Creek Dam,
U. S. Corps of Engineers
Lytle Amis Construction Co.,
Cambridge, Nebr.
Medicine Creek Dam
U. S. Bureau of Rec.
Hubert H. Everist, Sr., Contractor,
Weasles, Calif.
Delta-Mendota Canal,
U. S. Bureau of Rec.
Mason Construction Co., Tahlequah, Ok.
Pearl River Lock No. 1,
U. S. Corps of Engineers
McNary Dam Contractors
Plymouth, Wash.
McNary Dam (760,000 yds.)
U. S. Corps of Engineers
Mittry Brothers Construction Co.,
Mufan, Okla.
Mufan Dam, U. S. Corps of Engineers
Peter Kiewit & Morrison Knudsen,
Estes Park, Colo.
Colorado Big Thompson Project,
U. S. Bureau of Rec.
Lytle & Green Construction Co.,
Glen Ullin, N. D.
Heart Butte Dam, U. S. Bureau of Rec.
T. L. James & Co. Bush La
Pearl River Lock No. 2,
U. S. Corps of Engineers
Peter Kiewit & Sons Co., Fresno, Calif.
Friant Kern Canal
U. S. Bureau of Rec.
Darena Construction Co.,
Cottage Grove, Ore.
Darena Dam, U. S. Corps of Engineers
Guy Atkinson Co., Inc.,
Walla Walla, Wash.
Mill Creek Project
U. S. Corps of Engineers
Utah Construction Co.,
Hot Springs, S. D.
Angostura Dam
U. S. Bureau of Rec.
Morrison Knudsen Co., Inc.,
Casper, Wyo.
Kortes Dam, U. S. Bureau of Rec.
Guy Atkinson & J. A. Jones Const. Co.,
Hanford, Wash.
U. S. Atomic Energy Plant,
U. S. Corps of Engineers
Morrison Knudsen & M. M. Maylor,
Tracey, Calif.
Delta Mendota Canal,
U. S. Bureau of Rec.
Gordon Bress-Berendo,
Estes Park, Colo.
Estes Park Dam, U. S. Bureau of Rec.
A. L. Alley & Son, Contractor,
Pickstown, S. D.
Fort Randall Dam-pouring works,
U. S. Corps of Engineers
Adler Construction Co., Madras, Ore.
Dickinson Dam, U. S. Bureau of Rec.
Manner & Switzer Construction Co.,
Mole, Colo.
Bonnes Dam, U. S. Bureau of Rec.
Young & Smith Construction Co.,
Peoria, Colo.
Peoria Dam, U. S. Bureau of Rec.
S & H. U. Co., Hot Springs, Ark.
Bailey Mountain Tunnel,
U. S. Corps of Engineers
U. S. Engineers, Fort Peck Dam
McCarthy Improvement Co.,
Pickstown, S. D.
Fort Randall Dam,
U. S. Corps of Engineers
Al Johnson Construction Co.,
Pickstown, S. D.
Fort Randall Dam,
U. S. Corps of Engineers
Silas Mason Co., Pickstown, S. D.
Fort Randall Dam
U. S. Corps of Engineers
S. A. Healy, Riverdale, N. D.
Garrison Dam
U. S. Corps of Engineers
Adler Construction Co.
Dickinson, N. D.
Dickinson Dam, U. S. Bureau of Rec.
Peter Kiewit & Morrison Knudsen,
Riverdale, N. D.
Garrison Dam
U. S. Corps of Engineers
Hamilton, Williams & Noonan,
Beaumont, Texas
Neches River Dam,
U. S. Corps of Engineers
Consolidated Builders, Inc.,
Mill City, Ore.
Detroit Dam,
U. S. Corps of Engineers
T. L. James Co. Contractors,
Fort Worth, Texas
Fort Worth International Air Port
General Shea-Morrison,
Mungre Horse, Mont.
Mungre Horse Dam (3,100,000 yds.)
U. S. Bureau of Rec.

AUTOLENE LUBRICANTS CO.
1339 WEST EVANS AVE.
DENVER, COLO.

Please rush a copy of your Free Booklet, Facts On the Modern Placement of Concrete Through Air Entrainment.

Name_____

Address_____

City_____ State_____

ger Co., Helena, Mont. • C. H. Grant Co., Berkeley, Calif. • Le Roi-Rix Mach. Co., Los Angeles, Calif. • Lively Equip. Co., Albuquerque, N. M. • Buchanan, quip. Co., Houston, Texas • Western Equip. Co., Boise, Idaho • Western Equip. Co., Idaho Falls, Idaho • Wilson Equip. Co., Cheyenne and Casper, Wyo. • I. J. • Arthur H. Harris Co., New Britain, Conn. • Metalweld Inc., Philadelphia, Pa. • Builders Equip. & Supplies Co., West Medford, Mass. • O. B. Avery wan, Canada • Western Tractor & Equip. Co., Saskatoon, Saskatchewan, Canada • Japan Overseas Commercial Co., Ltd., Chuo-Ku, Tokyo, Japan.

RYEX EXPANDED METAL

Available Now from Ryerson—for Every Use

Here's one steel product that's in good supply. And one with very little restriction on its use. Ryex expanded metal is on hand at your nearby Ryerson plant in two types—standard and flattened—and in a wide range of sizes and gauges. It may be used in any authorized construction and its applications in the building and industrial fields are endless.

Use Ryex to reinforce small concrete slabs, for repair of walls, dams and paving and for all types of Gunite and stucco work. Use it to make tool and stock room enclosures, guards and screens, shelves, gates and walkways.

You'll find this versatile steel mesh has high bonding strength in concrete and effectively distributes concentrated loads over a wide area. You'll also like Ryex for enclosures and similar applications because it is more rigid than an equal weight of sold flat-rolled steel, yet affords good ventilation and high visibility through its open diamond pattern. Both standard and flattened Ryex are safe to handle since all sharp edges have been removed.

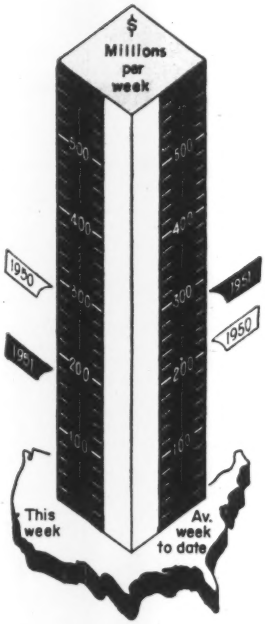
Of course most construction steels are in short supply due to defense demands. We can only promise to do our best to supply most requirements. But you can count on quick shipment of Ryex from Ryerson. Just call our nearest plant.

Hi-Bond was the first and is still the best of the new higher-bonding reinforcing bars. Every Hi-Bond bar meets or exceeds ASTM spec. A 305-49. Hard to get today, but well worth getting tomorrow — Hi-Bond re-bars.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO

THE CONSTRUCTION WEEK



Contracts by type of work

	This Week	Cumul 21 wks 1951	1950	% chge
Waterworks	$3.3	$92.0	$95.8	−4
Sewerage	3.9	133.8	95.2	+41
Bridges	1.6	118.0	139.4	−15
Highways	22.9	404.8	464.4	−13
Earthwork, Waterways	6.8	218.7	175.3	+25
Buildings:				
Public	32.9	932.8	687.1	+36
Housg., pub.	15.4	224.6	95.7	+135
Housg., priv.	41.6	867.2	1,442.8	−40
Commercial	10.8	267.0	373.4	−28
Industrial	22.8	2,001.1	479.9	+317
Unclassified	15.1	622.1	362.3	+72
Total	$177.1	$5,882.1	$4,411.3	+33

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

Index Base = 100		1913	1926	1949
Constr.	May '51	541.70	260.39	113.56
Building	May '51	399.87	216.16	113.67
Volume	Apr. '51	509	207	147

(Other business news on p. 79)

NEW HUDSON TUBE—WHEN? While plans for Hudson River bridges above New York move slowly forward, explosive pressures for a new crossing build up in the city's zone. On two successive Sundays this month the George Washington Bridge carried new-record traffic; morning and afternoon jams occur daily at the Lincoln Tunnel. Port of New York Authority engineers say they can get liner plates for the $85,000,000 third Lincoln tube (ENR Mar. 15, p 26) by August 1952; are pushing for speedy approvals by other agencies concerned.

MOSES WANTS A DEAL—One third-tube approval must come from the New York City Board of Estimate. City Construction Coordinator Robert Moses says he'll oppose this approval unless the Port Authority will take part in building a cross-town elevated highway. The authority wants no part of the deal, contending the $30,000,000 cross-town route is intrastate whereas the authority may do only interstate projects. As proposed, the third-tube project includes $20,000,000 worth of new approach work in the city.

UNSQUEEZE FOR IRON ORE—Last week was a significant one in the nation's fight to escape dependence on its dwindling reserves of high-grade iron ore. In the great harbor of Baltimore, the Baltimore and Ohio Railroad began operating its new ore unloading pier (ENR May 3, p 25); this facility can move 10,000,000 tons of foreign (Chile, Liberia, Venezuela, for instance) ore annually from ship to rail. And near Virginia, Minn., in the heart of our high-grade ore country, Oliver Iron Mining Co. broke ground for a taconite beneficiating pilot plant that will make concentrates out of Mesabi's abundant low-grade ores. (Other mining companies, too, have beneficiation projects in various stages.)

TOLL TURNPIKE CONNECTIONS—Action on legislation laying the groundwork for a connection between the Pennsylvania Turnpike and the new turnpike in New Jersey will be completed any day now. Traffic studies to back up bond sales programs will be undertaken first. Major share of the cost of building such a connection will fall upon the Pennsylvania commission, as its turnpike now ends west of Philadelphia and must be carved through the suburban area to reach the Delaware River. Which commission will bridge the river is yet to be decided.

PIPELINE EPIDEMIC—The Canadian Parliament is discussing the sixth pipeline bill to come before the House this season. Indications are that considerable pressure may be brought to induce concessions desired. The latest is by the Independent Pipe Line Co., planning a $60-million, 720-mile line from the Edmonton district in Alberta to Port Moody, B. C., and south to the U. S.

YEAR FOR THE PREFABS—Production of prefabricated houses this year looks good for 75,000 units, according to conservative industry estimates. That is fewer than the 100,000 talked about by some people earlier this year, but it means a hefty increase over last years' output of 55,000.

SPECIAL AGENCY?—Manufacturers of water and sewage works equipment are pushing hard to get their industry out from under the Housing and Home Finance Agency (as claimant agency for them) and get a special claimant agency of their own somewhere under National Production Authority's wing. They feel that the present set up begets needless red tape, little if anything in the way of results.

Manhattan Miracle

Hard-Driving Program Helps Cope with World's Toughest Traffic Problems – Manhattan Bridge Repaving an Example

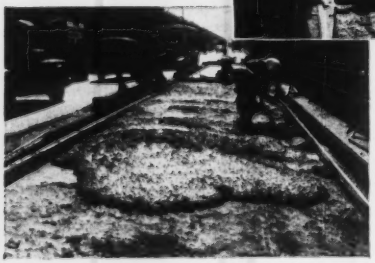
● New York City has just about the toughest traffic problem in the world. But it would be lots tougher were it not for a well-planned maintenance program which keeps everlastingly at the job of making the most of every inch of the existing facilities. Sound selection of methods and materials produces near-miracles in keeping traffic rolling while repairs and improvements are being made.

Sections of Manhattan Bridge's main roadway, carrying the bulk of nearly thirty million vehicles a year which use this famous span, were repaved while maintaining heaviest two-way traffic. Every detail of the job was planned and timed in advance.

Taking full advantage of the dependable *high early* strength of 'INCOR' AIR-ENTRAINING HIGH EARLY STRENGTH PORTLAND CEMENT assured quickest re-use of the new paving. Dependable *high ultimate* strength, in turn, assures long-time, low-maintenance service—shown by many years' 'Incor'* performance on highways in New York City and throughout the nation.

*Reg. U.S. Pat. Off.

'Incor' paving on Manhattan Bridge; right, placing concrete while maintaining two-way traffic; below, 'Incor' Air-Entrained Concrete assures long-time, maintenance-free service.



MANHATTAN BRIDGE — Manhattan-Brooklyn
Main Deck Repaving
Supervision: **DEPT. OF PUBLIC WORKS**, City of New York
General Contractor:
EDENWALD CONTRACTING CO., Bronx, N. Y.
Ready-Mix 'Incor' Air-Entrained Concrete:
COLONIAL SAND & STONE CO., INC., New York City

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ALBANY • BETHLEHEM, PA. • BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS
KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK • PHILADELPHIA • RICHMOND • ST. LOUIS • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 125,000,000 SACKS ANNUAL CAPACITY

CONSTRUCTION TRENDS

HOUSE SLASHES PUBLIC HOUSING; VOTES AID TO ONLY 5000 STARTS

Public housing prospects took a nosedive on May 4. The House of Representatives voted to cut the federally-aided, low-rent housing program to 5,000 starts in fiscal 1952.

It looked like a big year for public housing—before the House acted. The outlook was for about 55,000 starts, up to $500 million in expenditures. The House action won't affect the first half of 1951—fiscal 1952 doesn't start until July 1. But the cut in the second half could knock totals for the year well below what was expected.

The House action isn't final; the Senate still has to vote on the bill. Then it goes to conference between the two houses. More starts may be authorized somewhere in that process.

But—unless there's a big change in Washington—the vote in the House promises to put a big dent in public housing starts for 1951.

BIG PROGRAM—Without the cut, an estimated 45,000 federally-aided units would be started in 1951. Up to April 27, the Public Housing Administration had reported more than 11,100 units already started this year.

Until Congress decides, only projects sponsored by states and local authorities can be estimated accurately. These programs—in four states and one city in another state—should account for about 10,000 starts this year.

Thus there should be about 55,000 starts all told in 1951—if Congress lets the federal aid go through. If starts hit that figure, total construction expenditures on public housing will approach $500 million.

Some $200 million is sure: it will be spent in the first half, no matter what Congress does. That alone is almost as much as was spent all last year. But spending in the second half, which could reach $300 million, will fall below $275 million if Congress seriously cuts Public Housing Administration operations.

Still, total expenditures will be much greater than last year's figure of less than $250 million. With luck, they could be twice as big.

LARGE BACKLOG—PHA has a big backlog of jobs not yet started. Projects now in various stages of planning could keep the program going for several years.

By April 27, bids had been opened, but no contracts awarded, for 3,400 units. Bids had been invited for more than 7,500 additional units. Fully developed plans and cost estimates had been made for projects totaling 88,000 more units.

Sites for 69,000 other units have been approved. They still lack final plans and cost estimates—the next step in getting presidential approval of loans and contracts for annual contributions.

These figures show the size of the backlog of future contract awards under the federal-aid low-rent program. For fiscal 1952—starting this July—PHA thinks that 50,000-75,000 starts could be made if Congress let the program go ahead. Until the House clamped down, housing people expected Congress to set starts around that number.

State and local programs have been slowing down as the federal program picked up. They started 15,718 units last year. This year they scheduled 15,566 units: New York, 9,400; Massachusetts, 3,200; Pennsylvania, 2,500; Illinois-Chicago, 400; Cincinnati, 66. But, except under highly favorable conditions, total starts are not expected to be much more than 10,000.

Under the federal-aid program, local housing authorities had awarded 202 projects totaling 42,800 units by April 27. The units average 4.8 rooms, compared to a national average of 3.8 for rented dwellings. Based on bid prices, the average total development cost is $10,568 per unit.

Construction cost per unit, on the basis of contract awards, averages $7,872. Adding site-improvement costs of $600-$700 per unit, average spending for construction is about $8,500 per unit.

Thus an annual program of 50,000 federal-aid starts would spark some $425 million in construction contracts. PHA officials think that such a pace can be set and maintained—if Congress is willing.

BEHIND SCHEDULE—Actually, the Housing Act of 1949 authorizes close to 135,000 units per year. So far, the number has been held way below that figure.

Last July, President Truman set a quota of 30,000 starts for the second half of 1950. About 28,700 actually went under construction. Counting a few in the first half, when the program was just beginning, not quite 32,000 units were started in 1950.

This year, PHA has a budget limit of 37,500 units for the first half, but only 11,112 starts had been made by April 27. Many projects were held up because first bids were too high—and observers think that the program can't move fast under the present cumbersome system for processing projects.

But the administration wants to keep the program going, on a small basis, right through the current emergency. So PHA has orders to give preference to projects in defense areas. Tying the low-rent housing program to defense may get it more Congressional support during the mobilization period.

HERE'S THE *Profitable* ANSWER TO YOUR MATERIAL HANDLING PROBLEMS

CLYDE **WHIRLEYS · SAVE · SAVE · SAVE**

They save expensive installation costs. No costly trestle required as for bridge type cranes . . . just 2 sets of tracks for gantry to travel on. Whirleys shipped with machinery in cab intact, cuts erection time to days instead of weeks.

Clyde Whirleys save on maintenance. Proven engineering design plus highest quality workmanship and materials assure continuous duty. Saves down-time for service and repairs. Keeps out-put up.

Clydes save storage space. Their long-reaching, full revolving booms permit rapid stock piling of materials in wider areas on either side of tracks.

Check the many additional money-saving advantages of Clyde Whirleys. Write for Bulletin-12.

CLYDE IRON WORKS Inc.

DULUTH MINNESOTA

HOISTS - DERRICKS - WHIRLEYS - HANDI-CRANES

ROLLERS - BUILDERS TOWERS - CAR PULLERS

Engineering talent wasted

WHEREVER ENGINEERS GATHER to discuss the serious shortage of engineers there are reports of young men with engineering training being called to active service from important engineering positions only to be assigned to non-engineering work in the Army, Navy or Air Corps. Such waste of engineering talent is unavoidable under the present system which (1) fails to inquire as to the training of the men called and (2) ignores whether an individual will be of more value to the nation in a civilian job or in a different military job than the one to which he is assigned.

This condition has been a matter of concern to the Engineers' Joint Council for many months past. The council's Engineering Manpower Commission has asked the military and defense agencies in Washington to do something to correct it, but with little success to date.

Now the EJC commission has begun a new attack on the problem. It plans to present to the Secretary of Defense specific examples of waste resulting from the lack of policy directed toward conserving engineering manpower. To strengthen its position, the commission needs specific examples. Details of such cases should be sent to Carey H. Brown, chairman of the Engineering Manpower Commission, at 33 West 39th St., New York 18. Such reports should be accurate and complete as to the job the engineer held in civil life and the job to which he was assigned in military service.

The commission hopes at least to get such specific cases corrected, but more important, it hopes to be able to persuade the Department of Defense to set up a definite policy based on experience gained in correcting the cases laid before it as examples.

Bold engineering

IS AN URGENT NEED for economy the mother of bold engineering—to paraphrase a well-known adage? That question is inspired by some of the spectacular elements of recently built dams on the Dordogne River in France, which were described in the May 10 issue.

During the past two or three decades French civil engineering has been marked by bold departures from tradition to a much greater degree than has engineering in this country. Which raises speculation as to whether the cause is a difference in temperament or a much greater effort on the part of French engineers to get the utmost value out of each franc spent. Both causes may be operating. Another factor behind some of this boldness in engineering design could be the common practice of calling for bids on a complete project, both design and construction. Designers and builders work hand-in-hand, thus making the designers extremely cost conscious.

The relative lack of boldness or innovation in U. S. dams is of course not necessarily a mark of costliness. For example, simpler dams can be built faster, which frequently means more cheaply. Yet, with plentiful funds and materials available to U. S. designers, the incentive to save by radical departures from conservative engineering is not strongly present. Nor is there much pressure to include in designs elements that will cut costs for the contractors.

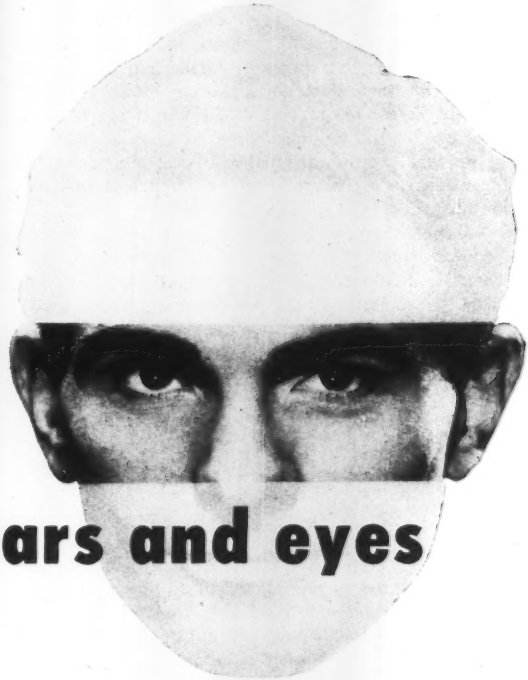
Looking back over famous American dams it will be found that most of the fame comes from construction achievements and not from design innovations. For our high-labor-cost economy, speedy, efficient construction techniques no doubt offer the greatest opportunity for cost saving. Yet the possibility of further savings through bold, new designs should not be overlooked. Materials savings are not unimportant to America, and changes in designs might give contractors further opportunity to devise new cost-saving techniques. The examples set by such famous French designers as Freyssinet, Coyne and Caquot, to mention only three, are at least a spur to some reflections on our design philosophy to be sure that it is properly serving our needs.

Too many battalion months

MAN-HOURS you probably know about, but a battalion-month is not so familiar. Obviously it is a military term, and since a battalion may contain upwards of a thousand men a battalion-month is a lot of man-hours.

The important thing about battalion-months is that too many of them are required to build the kind of airfields that the Air Corps needs for its modern planes. It takes 4½ battalion-months to build a runway for fighter planes that was built with one-third that expenditure of effort in World War II. A runway for a B-29 required 7½ battalion months, but a modern, medium jet bomber needs 10. And when you plan to build a runway for a B-36 the battalion-months skyrocket to 18.

The last war was often referred to as an engineers' war and sometimes as a construction war. Things that needed to be built were built fast, and it took a good many hundreds of thousands of Army Engineers and Navy Seabees to do it. It would appear that twice as many men would be needed in the next war to equal the construction speeds of World War II. Unless—and here's the challenge—we can equip them with machines and arm them with methods that will cut the construction time for modern runways and airfields in half. The opportunity for engineers, contractors and equipment manufacturers to help military planners out of a serious dilemma is obvious. A cut of even a single battalion month would have great strategic value.



Uses drivers' ears and eyes

TO KEEP HIGHWAY TRAFFIC CHANNELIZED

Double-Duty Traffic Marker combines sound and sight to keep traffic in lane. Drivers *see* the Marker clearly. What's more, they *hear* it! When tires ride the ribbed surface, there's an unmistakable warning hum.

The Marker is made from Atlas White Cement . . . built flush with the highway surface. It's clearly visible during the day because it contrasts with the pavement's grey. At night, its corrugations catch headlight rays and reflect them back to the driver, forming a ribbon of white.

This sound-and-sight Marker is an effective way to channelize high-speed traffic safely and efficiently. If you are planning a new highway, or improving an old one, write for further information to: Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

ATLAS® **WHITE CEMENT**

For Concrete Reflecting Curb and Markers

ENR-TM-19

"THE THEATRE GUILD ON THE AIR"—Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network

ENGINEERING NEWS-RECORD

MAY 24, 1951 VOL. 146 NO. 21

Strict rule book to govern administration of M-4 order

Question-and-answer interview with NPA construction control chief gives specific interpretations, reveals thinking on administration of control over industry

Tight rules will control the granting of project permits under the recently expanded M-4 construction order of the National Production Authority. No project that can be deferred without affecting the defense effort—or causing undue hardship—will get a license to start construction.

That is the basic thinking underlying administration of the order by NPA's Construction Controls Division, as explained last week by Rufe B. Newman, division director. At the weekend, NPA had about completed its criteria to guide decisions on project applications under the broadened order.

To clear up some of the confusion about the meaning of M-4 and the mechanics of handling project applications, ENGINEERING NEWS-RECORD put to Newman a number of questions that are frequently asked. The gist of the answers (with added explanations by ENR on some points) is given below.

First of all, Newman emphasized that he could make no interpretations beyond what is written in the M-4 order. He was equally emphatic on the point that NPA has to consider every project application individually on its merits. The director recommended that everybody who has a job coming up get a copy of the order and read it carefully.

Q. What type of constructions will not be permitted under any circumstances?

A. Section 15 of the order specifically prohibits buildings, structures, or projects (public or private) that would be used for recreational, amusement or entertainment purposes. It names specifically—in List A of this section—48 types of prohibited construction. But the prohibition is not limited to these named types.

(Note by ENR: A recently broadened definition of "commence construction" (see below) allows an owner or builder who had done substantial site clearance for a prohibited project before Oct. 26, 1950, to apply now for an exception.)

Q. What is meant by "commence construction"?

A. Under M-4, the definition of "commence construction" does not constitute an exemption. Even if you had started a project at the time the original order or any of its later amendments took effect (covering the kind of job you are building), you should file an application with NPA.

(Note: The May 3 amendment of M-4 expanded the definition by saying "commence construction" means substantial site clearance (including demolition of buildings or structures). This addition liberalized the previous tighter definition, which had limited "commence construction" to mean: Incorporate into a building, structure or project substantial quantities of materials which are to be an integral and permanent part of the project.

(M-4 does not specifically require a builder who had a project under way—when the order took effect—to apply for a permit. But NPA advises him to file, as an aid to himself and to the agency in the future operation of construction controls. Under CMP, the builder would fill out a form similar to NPA F-24 anyway.)

Q. Is it necessary to apply for a permit for all types of construction not expressly prohibited?

A. You must apply for all projects covered by Section 16, List B, and by Section 17, List C.

(Note: List B covers commercial projects in eleven categories. List C embraces practically all other projects, public and private, using more than 25 tons of steel. Also included in List C are apartment houses over three stories in height, single-family residences costing more than $35,000 to build, terminal warehouses, and television and

(*Continued on page 24*)

Professional engineers urge pay rise

The New York State Society of Professional Engineers, at its Silver Anniversary Convention meeting in New York City, approved a report amending its schedule of minimum fees and salaries for professional engineers to set higher minimums.

Under the new schedule, fees for professional services will range from 6%, for projects costing more than $10,000,000, to 12%, for projects costing less than $100,000.

Recommended minimum salaries for the first quarter of 1951 are $7,200 to $8,400 for professional engineers and $3,600 to $4,200 for engineers in training, the higher amounts applying to the New York City metropolitan area and similar high-cost areas.

The problem of keeping an adequate supply of engineering graduates flowing from colleges to industry was also a featured subject on the program. A college-industry joint symposium considered such questions as (1) recruitment (only about half enough freshmen will begin engineering studies in the next three years); (2) training (technical fundamentals are still basic in college, but more stress on leadership qualities is needed, with industry continuing—for the men it hires—the education process for 5 to 10 years; and (3) research (the college responsibility is to develop research men and not new knowledge except insofar as it accidentally may result from the research, either basic or applied in the training schedule.)

For the colleges the speakers were Dean N. S. Hibshman, Pratt Institute; Dean William Allan, College of the City of New York; and Prof. Harold K. Work, New York University. Industry was represented by M. W. Boring, General Electric Co.; R. H. McCarthy, Western Electric Co.; and Wilbur A. Lazier, Charles Pfizer & Co. The moderator was Waldo G. Bowman, ENGINEERING NEWS-RECORD.

New officers elected include: Charles B. Molineaux, president; Edward J. Nunan, first vice president; and Carl M. Gilt, second vice president. Re-elected were Ernest F. Fox, financial secretary, and Patrick M. Corry, treasurer.

Strict rules govern M-4 administration

(Continued from page 23)
broadcasting facilities. But an important exemption contained in the order gives construction clearance to industrial projects that have been certified for rapid tax amortization or government defense loans. These projects, already reviewed and approved, can go ahead without an additional permit.)

Q. In computing 25 tons of steel, what forms and shapes are counted?

A. All forms and shapes defined in NPA order M-1 (the iron and steel order) and also reinforcing steel.

(Note: Order M-1 covers structural shapes, piling, plate, rails, bars, pipe and tubing, wire, nails, sheets, strip, castings, fence and fence posts, mesh, wire rope, and a long list of other products less used in construction.)

Q. For a project needing more than 25 tons of steel, is the quantity of steel an important consideration in obtaining a permit?

A. NPA checks the steel tonnages on the application as closely as possible. If not satisfied with the figures given on the application form, the agency asks for the plans and specifications to support those figures.

(Note: The purpose of the order is to conserve critical materials. The amount of steel to go into a project is a significant factor. Even for essential projects that merit approval, NPA can ask modification of plans to conserve steel on other critical materials.)

Q. Is cost of the project an important consideration?

A. Cost is not a primary factor in determining whether a project can be approved. NPA accepts the cost estimate of the owner or builder.

Q. What is relation of M-4 to CMP?

A. As CMP regulations for construction have not yet been worked out, no official answer can be given.

(Note: NPA intends to relate M-4 closely to the Controlled Materials Plan. Permits under M-4, CMP allotments of controlled materials and priority ratings for other products will operate together for approved projects.)

Q. If I want to build a plant to produce materials essential for defense, will I need a permit?

A. Yes. You must apply for authorization, if your project will require more than 25 tons of steel. Approval will depend on the need for the plant and on the documentation you supply.

(Note: Actually, essential plants will get approval almost without exception.)

Q. How about schools, hospitals, sewer and water projects, highways and bridges?

A. Permits are required for all public projects that will use more than 25 tons of steel.

Q. If I plan a warehouse for storing essential materials, will I need a permit?

A. Again, yes.

(Note: Here the chances for approval would be good.)

Q. For an office building or store, what are the chances for a permit?

A. Each project has to be considered on its individual merits.

(Note: Unless the building is to serve a defense community or other defense needs, the application probably will be denied. But projects necessary for public health, safety or welfare are eligible for approval. Good documentation to back up the application will speed action and aid consideration of any project.)

Q. Is a permit required to replace a building destroyed by fire, flood or storm?

A. Yes, if the job takes more than 25 tons of steel, or if the destruction took place prior to July 29, 1950.

(Note: If the disaster occurred since July 29 of last year, and the new structure can be built with less than 25 tons of steel, the project is exempt from the order.)

Q. How are commercial building applications processed by NPA?

A. Projects involving no more than 50 tons of steel and $1,000,000 in cost are handled in field offices. Larger jobs come to Washington for determination. The definitions that apply to the two classes of projects are internal operating criteria that would merely add to the confusion if they were made public.

Q. What about applications for other types of projects covered by the new 25-ton steel limitation?

A. To speed action, all those applications are being sent to Washington.

As soon as field office staffs have been built up and instructed in the new criteria, many of the applications will be processed there, within certain limitations not yet determined. Delegation of authority for field office action will be issued soon.

Q. How long does it take to process a properly executed application?

A. It can only be said that applications are acted upon as promptly as possible.

CMP construction application confused

Washington still isn't certain just how the Controlled Materials Plan, starting July 1, will affect most industrial construction.

So businessmen planning new plant, and builders, will have to guess at post-July 1 expansion. The best bet is to place orders now for everything you think you will need after July 1 in the way of construction materials. Some phases of construction controls —like the licensing program—are getting squared away. But the controllers cannot (or don't want to) make up their minds on the standards by which the industry will live under CMP.

No one has decided how much construction will get in the way of government assistance in obtaining essential materials. The problem involves making a decision as to essentiality, and that's the decision the controllers have been sidestepping consistently in the construction and all other fields.

• **Military requirements**—Washington has known for some time what will be the total available supply during the July-September quarter of the three controlled materials—copper, steel and aluminum. Defense Production Administration has on hand the metals needed by the military programs.

In fact, DPA already has determined that CMP allocations for military and supporting production in the third quarter will take about 30% of total steel supply (steel industry officials put the total nearer 75%), 40% of copper, 50% of aluminum.

DPA lined up the job this way:

Military and other production for which DO-priorities have been issued, will get all the metal they really need. In this group are the DO-rated programs for production of electric power, railroad freight cars, petroleum and natural gas production.

Second, an "intermediate" group of production activities will get some sort of materials assistance. In this category are most industrial equipment and services not in the first, "essential" classification. This is the area where the controllers hope to save materials by postponing expansion of some projects not needed for military production.

Only after the decision is made as to what types of construction will get allotments, can the controls agencies complete basic orders like CMP Regulation 6, which will give the ground rules for obtaining and using CMP allotments of materials.

Architects hear A-bomb shelter needs; use of existing facilities described

Underground garages not acceptable due to suffocation, fire and panic hazards—Bulldozed playground pits advocated for protection of school children—ask better materials, manpower allocation

Some of the "dos" and "don'ts" of bomb-proof shelter construction were spotlighted at the recent American Institute of Architects' 83rd annual convention in Chicago. Observations of a panel of experts on this timely topic varied widely but, collectively, they advocate:

1. Dispersal—not concentration—is the only answer for atomic bomb protection.

2. Large, dual-purpose parking garages and emergency bomb shelters are impractical and unsafe.

3. Alterations in school buildings for atomic defense do not offer sufficient safety to justify their expense.

4. Suburban shopping centers will render valuable services following an atomic attack.

5. Bomb-resistant building corridors will give the greatest immediate protection for the most people.

6. Architects should be more conscious of A-bomb forces in making their designs.

7. The present confused competition for materials and manpower, between civil defense, national defense and private enterprise, must be eliminated if civil defense planning is to be made effective.

• **Coordination is lacking**—The lack of coordination in solving complex problems of civil and national defense was scored by Morris Ketchum, Jr., New York architect. He called for an over-all defense program at every level—national, state and local—and both government and private and enterprise should become more conscious of their responsibilities in the programs.

Ketchum opposes the construction of dual-purpose underground parking garages and emergency bomb shelters on the ground that huge shelters expose a dangerous concentration of people within a single shelter to the hazards of suffocation, fire and panic.

In peacetime, they might well be equally useless in solving the off-street parking problem in congested downtown districts, since most motorists are reluctant to walk more than 1,000 ft to their destinations after parking their cars, he stated.

• **Bingham Plan praised**—He commended New York's proposed "Bingham Plan" (ENR Jan. 4, 1951, p. 24) which calls for the construction of segments of New York City's proposed Second Avenue subway, to be used as temporary shelters. Costing $102,000,000, this plan would provide emergency sleeping accommodations for 101,000 persons and temporary shelter for 1,000,000 said Ketchum.

For emergency protection of school children, Lawrence B. Perkins, Chicago architect, recommends the bulldozing of shallow pits in playground areas. These pits, designed as permanent, useful playground facilities, would offer protection from some forms of atomic danger.

Communities planning new schools, declared Perkins, should design strong basements with reinforced concrete flooring over that part assigned to shelter. It is especially important, he warned, to check utilities to make sure that no water, gas or steam lines go through the shelter area.

• **Suburban centers needed**—Victor D. Gruen, Hollywood architect, emphasized that the establishment of emergency shelters along the periphery of large cities is an important function of civil defense. Suburban shopping centers now in use or planned in several cities are especially suitable for this role of emergency shelter and disaster relief, the speaker commented.

These centers—called "emergency shelter camps," "relocation centers" or "rehabilitation centers"—can give first aid to the injured; emergency lodging and shelter to people whose homes have been destroyed; emergency storage for food, clothing and equipment; and quarters for registration and organization of refugees.

In addition cafeterias and restaurants can serve food to emergency victims. The center usually can provide its own power and water. And the interior road and parking system of the center are ideal for the rapid draining of traffic off the nearby major arteries. The construction of such multipurpose centers should not only be permitted, but encouraged, concluded Gruen.

Spherical and round-shaped structures are the most efficient in resisting high air pressures from atomic explosions, declared Fred N. Severud, consulting engineer, New York City. The popular belief that basements are the safest places does not necessarily hold true in many cases. Moreover, the time element would prevent many persons in large office buildings from reach the basement in case of emergency.

• **Officers**—Glenn Stanton, Portland, Ore., was elected the new president of the AIA. Other officers include: Kenneth E. Wischmeyer, St. Louis, first vice-pres., Norman J. Schlossman, Chicago, second vice-pres.; Clair W. Ditchy, Detroit, secretary; and Maurice J. Sullivan, Houston, treasurer.

Roy W. Crum dies; highway research head

Roy W. Crum, director of the Highway Research Board of the National Research Council since 1928, died in Washington May 13 at the age of 66.

A civil engineering graduate of Iowa State College in 1907, Mr. Crum was one of the pioneers in road materials research. Teaching at Iowa State and work at the Iowa Experiment Station occupied him until 1919, when he became the first head of the Iowa Highway Department's materials testing department.

About the same time, a movement looking toward better coordination of highway research on a national scale was started, which led eventually to the formation of the Highway Research Board, as a unit of the National Research Council. Crum was chosen as its director in 1928.

Under his leadership research carried out with the board's cooperation and encouragement has expanded greatly and its usefulness has been extended to every field of highway activity. When the first annual meeting of the board was held in 1922, two committees reported; in January of this year, at the 30th annual meeting, there were reports from most of nearly 70 committees that are now working under the board's direction.

Work begins on $550-million B.C. job

With an approved agreement with the British Columbia government and a United Kingdom order for half the projected output in its pocket, the Aluminum Co. of Canada has ordered an immediate start on the first phase of its long-range, $550-million project in the Tweedsmuir Park area (ENR Jan. 11, p. 25). First aluminum production is scheduled for 1954.

The immediate development will include building of a tunnel for water, a powerhouse, refinery and townsite. It will involve $160 million for 400,000 electrical hp to produce 80,000 to 100,000 metric tons of aluminum. About $23 million of the $160 million will be spent this year.

The project, in its first stage, will utilize the waters of Tahtsa and Nanika lakes. A 2,600-ft head and a 10-mi tunnel will drop water through the Tahtsa mountain range to a cavern-located powerhouse on Kemano River, whence power will be carried overland to Kitimat townsite.

Construction is expected to require more than 2,000 workers and 1,200 will be employed when the project is complete. Development of the entire hydro potential of 1.6 million hp and of matching smelter facilities will bring employment to 10,000 and create a Kitimat population of 50,000 persons.

Power construction is being handled by Morrison-Knudsen Co. of Canada, Ltd., affiliate of Morrison-Knudsen Co., Inc., Boise, Idaho. Working with M/K are Mannix Construction and Northern Construction of Vancouver. Northern Construction is building a 10-mi road from Kemano Bay up Kemano River to the site.

Kitimat Constructors, a group of eight Vancouver contractors, is now at work surveying the townsite at Kitimat and building a construction camp. Horie-Latimer of Vancouver is building a wharf. Bauxite from British Guiana will be processed.

First Kansas water pact approved by Reclamation

Interior Department Secretary Oscar L. Chapman has approved the contract form for a Bureau of Reclamation compact for the irrigation of 49,000 acres in Northern Kansas on the Bostwick Division of the Missouri River Basin project.

The contract form was sent to the local irrigation district for execution. It is the first Missouri Basin contract to be negotiated by the bureau in the state of Kansas.

The Bostwick Division includes almost 100,000 acres of irrigable land in both Nebraska and Kansas. Most of the water supplied will come from storage capacity provided by the Harlan County Reservoir now under construction by the Corps of Engineers on the Republican River near Alma, Neb. (ENR April 5, p. 29).

DETROIT IN THE WEST—Despite cold weather and snow, Consolidated Builders, Inc., contractor for Detroit Dam on the North Santiam River in Oregon (ENR Dec. 21, 1950, p. 39), is on schedule—42% completed. Two 8-yd buckets pour 3,500 to 4,000 cu yds of concrete every 24 hours. The 185-ft boom shown carries concrete for the substructure of the powerhouse below the dam. Powerhouse construction contract is to be awarded by the Army Engineers June 29. Outlet of the diversion tunnel is at lower right. The dam will rise 371 ft in height above normal tail water and store 455,000 acre-ft of water which is to be used to provide water for the 100,000-kw power plant, for irrigation and domestic uses. Contract price is $28 million.

Chapman fights back, asks Interior fund restoration

Secretary of the Interior Oscar L. Chapman last week began a strong attack to recover a cut of $39 million made in his request for fiscal 1952 by the House Appropriations Committee. (ENR April 26, p. 25.)

Chapman sent a sharply-worded statement to the Senate Appropriations Committee along with his request for restoration of the funds cut from Interior's proposed budget. His requested $559 million; was cut to $520 million.

An amendment in the House, by Rep. Kenneth Keating, New York Republican, came in for his bitterest attack. The amendment would prevent the Bureau of Reclamation from constructing electric transmission lines in areas served by private electric utilities which have wheeling agreements with the bureau. (Contracts under which the government moves blocks of power over private transmission lines are known as "wheeling agreements.")

"If the Keating Amendment is written into law," Chapman charges, "The Reclamation power program would be strangled . . . It puts the department at the complete mercy of the private utilities . . ."

An amendment proposed by Rep. Ben. Jensen, Iowa Republican, which provides that Interior, with certain exceptions, could fill only 25% of the vacancies that occur during the fiscal year, also came under Chapman's fire. He declared, "There has never been a proposal which would result in a more complete breakdown of government operations than would this amendment if it became law."

You used 1,100 gal (av.) of water per day in '50

Water use in the U. S. reached 1,100 gal/cap/day in 1950. U. S. Geological Survey estimates that 170 billion gallons were used for domestic, commercial, industrial and farm purposes. In addition, 1,100,000 mgd were put to water's largest single use, generating hydro-power.

These estimates, claimed to be rough but representative of the proper order of magnitude, are presented in a report "Estimated use of water in the United States—1950", authored by K. A. MacKichan.

The report—not yet published—divides the 170 billion gallons as follows: 14 billion for municipal uses; 3.6 billion to rural, excluding irrigation; 77 billion from private sources serving industry; 75 billion for irrigation. More surface water went to industry than to irrigation; irrigation uses more ground water than industry.

Six-mile tube, seven plants for Colorado power, water

A new Bureau of Reclamation plan for the state of Colorado—approved last week by Secretary of the Interior Oscar L. Chapman—calls for a six-mile tunnel through the Continental Divide, seven hydroelectric plants and a 50-mile canal system. Based on 1949 prices, cost of the undertaking is put at $147.4 million.

Known as the Gunnison-Arkansas Project, waters from the two rivers would be utilized to provide 104,800 kw of electric power, supply water to 322,000 acres of irrigated land and supplement domestic water supplies in Colorado Springs, Pueblo and eight other Colorado communities.

The tunnel and canal system would divert 69,200 acre-feet of water annually from the western to the eastern slope of the Rockies.

The seven power plants proposed are Elbert, 8,700 kw; Granite, 19,200 kw; Wapaco, 16,500 kw; Princeton, 11,700 kw; Johnson, 15,000 kw; Salida, 22,700 kw; and Pueblo, 11,000 kw.

Congress must add its approval and appropriate funds before construction can begin on this extensive multi-purpose project.

Alcoa to build $45-million aluminum plant in West

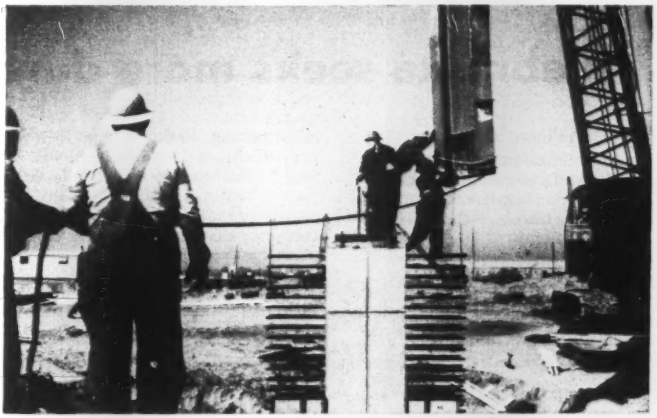
A $45-million aluminum-reduction plant will be constructed by the Aluminum Co. of America at Wenatchee, Wash. Alcoa has signed a power contract with the Chelan County Public Utility District.

The plant will produce 170 million lb of pig aluminum annually and will require 180,000 kw of power. Chelan PUD and Bonneville Power Administration will supply the power.

Coincident with signing the Alcoa-PUD power contract, Puget Sound Power & Light Co. and PUD signed 50-year lease agreements which will enable the PUD to install six new generators at Puget Power's Rock Island plant near Wenatchee. These will increase the plant's power output by 150,000 kw.

Power from the first of the new generators is expected to be available Nov. 1, 1952. The other five will be installed at 45-day intervals. When all are operating, the PUD will sell Alcoa 120,000 kw and Bonneville an additional 60,000. Bonneville will take over more of the Alcoa load in 1955 and all of it in 1957, freeing the Rock Island plant for general use.

The company expects the new plant to be in operation in 15 months, with Bonneville providing power until PUD power is ready.



FIRST STEEL FOR STEEL—An eight-ton column, 67 ft high is lowered into position on a foundation pier at the site of U. S. Steel's Fairless Works, near Morrisville, Pa. American Bridge Co. steel workers here begin erection marking the start toward getting 175 acres under roof on the 3,800-acre site. The plant is scheduled to begin producing early next year and eventually will turn out 1,800,000 ingot-tons annually.

NFPA discusses bombs and fire at meet

"Bomb shelters should not be recommended until the possibility of attack on a plant has been much more clearly defined than it is possible to define it now." This is the conclusion reached at a recent meeting of the National Fire Protection Association Committee on Civil Fire Defense.

The finding was reported by Horatio Bond, NFPA's chief engineer, at the 55th annual meeting of the association in Detroit last week. He went on, "There are certain areas of buildings safer than others and each plant should study the construction of its buildings to see where those safest areas are."

He pointed out, for example, that the central corridors of fire-resistant buildings often are some of the safest places available in case of enemy air attack.

Discussing fire protection, Bond said, "One of the important lessons of the last war was that fires were fought principally with water that was stored at the property on fire." Regarding the possibility of destruction by bomb blast of gravity tanks supplying sprinkler systems, he said, "In light of the fact that the plant is likely to be at some distance from the actual center of impact of the (Atomic) bomb, the chances are extremely good that a gravity tank will not be any more readily blown over than will the buildings of the plant itself."

• **Three-point protection**—NFPA believes that the best scheme for plant protection requires three organizations: (1) The fire-protection officer, who has charge of the fire brigade and fire inspection: (2) fire guards—"first-aid" firefighters recruited from production personnel; and (3) a warden service to make exit arrangements for plant personnel.

The committee thinks it only prudent when planning additions to existing plants that new structures be placed a few hundred feet away from existing buildings, if possible. Especially is this advisable in or near metropolitan areas where probability of enemy air attack is greatest.

Brig. Gen. Clyde E. Dougherty, civil defense director for Detroit, said, "Until wars eventually are outlawed, civil defense must take its place along with military defense."

The association re-elected A. H. S. Stead, Montreal, Canada, president at the close of its five-day meeting.

New homes total one-third of Canadian construction

Out of a total of $2.3 billion spent on construction throughout Canada in 1950, $804 million was spent on new homes—according to a recent report by the Canadian government's Central Mortgage & Housing Corp., Ottawa.

New homes built amounted to 90,400 and there were 2,800 conversions. In 1949, there were 89,500 new homes and 3,422 conversions. Non-residential construction in 1950 amounted to $1.5 billion and to $1.3 billion in 1949.

Nebraska seeks more durable concrete

William H. Palmer
Administration Division Assistant
Nebraska Department of Roads and Irrigation
Lincoln, Neb.

SIX MILES OF TEST PAVEMENT were laid last year by the Nebraska Department of Roads and Irrigation in the hope of finding a concrete, made from locally available materials, that will be more durable than the concrete made from those materials in recent years.

Nebraska, like many other states, has had trouble with concrete placed in its pavements and bridges, due to unfavorable reactions between the most available aggregates and the cement used in making the concrete.

"Map-cracking" became evident on the surface within four to six years after the concrete was laid. This was followed by an abnormal and progressive expansion which, in the case of concrete pavements, resulted in complete closing of the expansion joints. Still later, serious deterioration of the surface developed. This has been especially true of concrete pavements laid subsequent to 1930, at which time the specifications for cement used in the pavements were modified to require finer grinding and minor changes in chemical composition to accelerate the gain in strength and to produce higher ultimate strength.

• **Aggregates changed**—Nebraska's chief sources of aggregates for concrete are the natural sand-gravel deposits of the Platte, Republican, Blue, Loup and Elkhorn rivers. Since 1946, contractors producing concrete for the highway department have been required to supplement the native sand-gravel with 30% of fine limestone, 50% of dolomite or coarse limestone, or 60% of very coarse gravel.

Of the three alternatives, that of using fine limestone has been found the most economical for work in most sections of the state. Nebraska, however, does not have sizeable quantities of good quality limestone. Most of the limestone used in concrete for the highway department has been imported from Iowa, Kansas or Missouri.

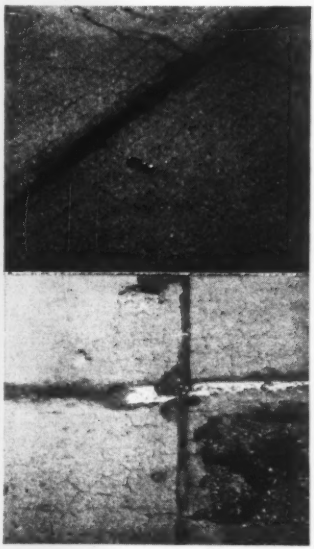
• **Air entrainment adopted**—Studies by highway department engineers led them to believe that entraining more air in concrete would produce pavement with greater resistance to freezing and thawing. To familiarize Nebraska contractors with the use of air-entraining additives, the highway department, in 1946, required that at least 50% of the concrete laid on each project that year should contain air-entraining additives. Since 1947, all concrete laid for the highway department has been air-entrained.

• **Pozzolans tested**—The 1950 experiment was primarily concerned with the use of pozzolanic materials, because research has indicated that such materials will minimize map-cracking and abnormal expansion. Two types of pozzolans were employed, fly ash and portland-pozzolan cement. Fly ash was obtained from electric utilities in Chicago, and the special cement was produced at one of Nebraska's cement plants by heating selected clay to about 1,700 deg F and mixing the refined clay with standard cement.

• **The test road**—The 6.1-mi test section was laid on U. S. Highway 30 between Fremont and Arlington, a straight stretch of highway carrying heavy traffic. This location is near the Platte River, which extends across the entire state from east to west and has more potential aggregates than any other single source. There are 26 test sections varying in length from 600 to 2,000 ft. Fourteen sections contain some fly ash, four were laid with specially prepared portland-pozzolan cements, and eight were laid with local aggregates but with varying gradations of aggregates and an air-entraining agent. The latter was added at the mixer.

There are only two cement mills in Nebraska. Cement from each one was used in one section of each type of concrete under test in the project.

As control-units, two sections were paved with concrete designed according to Nebraska's current specifications, known as 47B. It is made with six sacks of cement per cubic yard, about a ton and a half of aggregate and an air content of 3 to 7%. In the aggregate, approximately 30% is fine limestone, only 5% of which, the specifications state, will be retained by a one-inch sieve and 90% of which must be retained on a No. 4 sieve. Native sand-gravel makes up the remaining 70% of the aggregate. Only 25% of this material may be retained on a No. 4 sieve and only 55% on a No. 10 sieve.



"MAP-CRACKING" and deterioration of concrete pavements resulting from reaction of cement and aggregates. An early stage is shown at the top, and below is more severe cracking and spalling.

• **Test-mix features**—The type of concrete identified in the accompanying table as EXP-1 contains the same percentage of aggregates and the same air content as does 47B, but the quantity of cement was increased to 6½ sacks to the cubic yard. This type of concrete is expected to answer the question: Should more cement be added to Nebraska's present standard concrete for pavements which will have to withstand unusually heavy traffic?

The EXP-2 concrete contains a combined aggregate similar to a single sand-gravel aggregate that was used extensively in Nebraska in pre-war construction. The EXP-2 concrete has an air content of 5 to 8%, which is 3 to 4% higher than the air content found in concrete made with Nebraska sand-gravel without the use of air-entraining additives. EXP-2 concrete is made with seven sacks of cement to the cubic yard and about 1.4 tons of aggregate.

The same components in the aggregate and the same air content as in the EXP-2 mixture were used in preparing the EXP-3 concrete, but only six sacks of cement were used per cubic yard and 94 lb of fly ash were added as cement replacement.

EXP-4 concrete has the same aggre-

gate and air content as EXP-2 and EXP-3 but it contains 188 lb of fly ash and the cement content was reduced accordingly to five sacks to the cubic yard. Four sections of the project contain this mixture since it contains the largest amount of the fly ash, which may act to prevent the present undesirable condition in concrete made with Nebraska sand-gravel.

Nebraska Highway Department engineers considered the possibility that the EXP-4 concrete may contain too little cement for the needed strength. With this consideration in mind, EXP-5 concrete was mixed with exactly the same ingredients as EXP-4 except that the cement was increased from 5 to 5½ sacks per cubic yard.

Highway department engineers believe that Nebraska's native sand-gravel contains too many particles of medium gradation and not enough of the coarse gravel and fines. Although the aggregate in EXP-6, EXP-7 and EXP-8 concretes is all from the Platte River, the gradation is improved by producing the concrete aggregate in coarse and fine components. These aggregates are known as "H" coarse and "H" fine.

TABLE I—CONCRETE PROPORTIONS AND COMPOSITION OF TEST PAVEMENTS

One section of each type of concrete was made with each of the two Nebraska brands of portland cement, except as noted below.

	Basic quantities			Air content	Aggregate components			
	Per cubic yard of concrete			of	(Shown as percent of total aggregate)			
Class of concrete	Portland cement (Sacks)	Fly ash (Pounds)	Total aggregate (Tons)	plastic concrete (Percent)	47B Coarse	47B Fine	H Coarse	H Fine
47B	6.0	—	1.45–1.55	3–7	27–33	73–67	—	—
EXP–1	6.5	—	1.42–1.53	3–7	27–33	73–67	—	—
*EXP–2	7.0	—	1.32–1.47	5–9	—	80–90	20–10	—
EXP–3	6.0	94	1.31–1.46	5–9	—	80–90	20–10	—
**EXP–4	5.0	188	1.30–1.45	5–9	—	80–90	20–10	—
EXP–5	5.5	188	1.28–1.43	5–9	—	80–90	20–10	—
*EXP–6	6.4	—	1.41–1.53	4–8	—	—	50–60	50–40
EXP–7	5.4	94	1.40–1.52	4–8	—	—	50–60	50–40
**EXP–8	4.4	188	1.39–1.51	4–8	—	—	50–60	50–40

** A total of four sections, two with each brand of cement, were paved with this mixture.

* Two additional sections were made with this same mixture except that a portland-pozzolan cement was substituted for the normal portland cement.

TABLE II—AGGREGATE COMPONENTS USED IN CONCRETE FOR THE TEST SECTIONS

Type of aggregate	47B Fine Min.	47B Fine Max.	H Fine Min.	H Fine Max.
Total percent retained on 1-inch sieve		0		0
" " " on No. 4 sieve	5	25		
" " " on No. 10 sieve	35	55	5	20
" " " on No. 20 sieve	60	80	25	45
" " " on No. 30 sieve	75	90	45	65
" " " on No. 100 sieve	95	100	95	100
" " passing No. 200 sieve		3.0		3.0
" " clay lumps		0.5		0.5

Type of aggregate	47B Coarse Min.	47B Coarse Max.	H Coarse Min.	H Coarse Max.
Total percent retained on 1½-in. sieve		0		0
" " " on 1-in. sieve	0	5		
" " " on ¾-in. sieve	0	20		
" " " on ⅜-in. sieve	50	80	10	40
" " " on No. 4 sieve	90	100	40	65
" " " on No. 8 sieve			90	100
" " " on No. 20 sieve	95	100		
" " passing No. 200 sieve				3.0
" " clay lumps		0.5		0.5
" " shale and coal		1.0		

The aggregate in EXP-6, EXP-7 and EXP-8 is composed of about 55% of the "H" coarse and 45% of the "H" fine. Only 65% of the "H" fine may be retained by a No. 30 sieve. From 40 to 65% of the "H" coarse material must be retained by a No. 4 sieve.

All three of these latter types of concrete have air contents of 4 to 8%. EXP-6 contains 6.4 sacks of cement to the cubic yard and no fly ash, EXP-7 was made with 94 lb of fly ash and the cement content reduced to 5.4 sacks to the cubic yard; and EXP-8 has only 4.4 sacks of cement per cubic yard with 188 lb of fly ash as cement replacement.

Two of the 26 sections were paved with a concrete made with seven sacks of portland-pozzolan cement and the typical sand-gravel aggregate such as was used in the EXP-2, EXP-3, EXP-4 and EXP-5 mixtures.

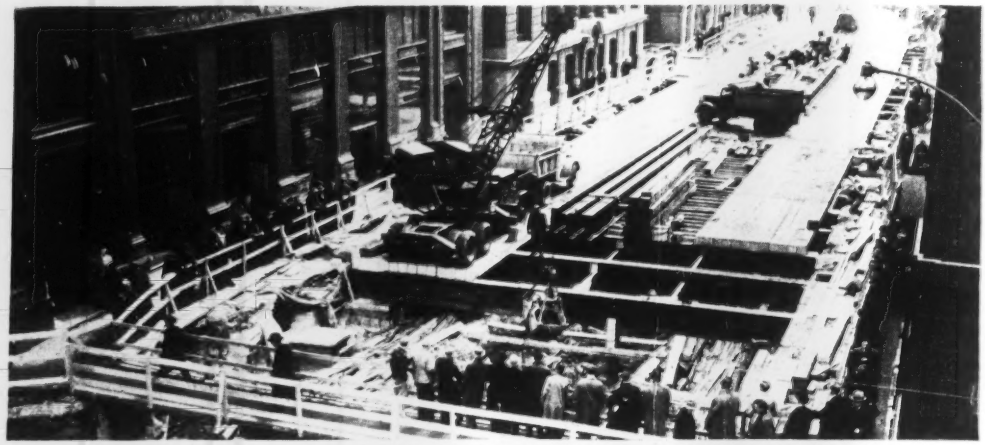
Another two sections in the project contain concrete with 6.4 sacks of portland-pozzolan cement to the cubic yard combined with aggregate like that used in EXP-6, EXP-7 and EXP-8.

• **Types of tests**—During construction, a crew of concrete technicians made continuous tests of slump, air content and yield weights and special consistency tests. Two sets of sample beams and cylinders were cast from the concrete actually used in each of the 26 sections. Each set consists of twelve 3 x 4 x 16-in. beams, five 6 x 6 x 30-in. beams and six 6 x 12-in. cylinders. At the two locations in each section from which these samples were taken a network of brass plugs was installed longitudinally and transversely for future measurement of expansion. In addition, eight cores of concrete were taken from each of the 26 sections last fall.

Some of the samples will be subjected to accelerated freezing and thawing tests, some will undergo alternate wetting and drying and some will be observed and tested while they lie in the outdoor proving ground adjoining the laboratory.

Test sections are separated by one-inch expansion joints, primarily to delineate the sections. There are no expansion joints in the sections themselves—following normal practice of the department—even in the ones 2,000-ft long. Dummy joints were installed at the end of each day's run.

Those largely responsible for the development and completion of this project are G. F. Swatek, materials engineer, and R. E. Bollen, testing engineer. The work was carried out under the direction of R. F. Weller, chief highway engineer. The contractor was Dobson and Robinson of Lincoln, Neb.



WHILE TORONTO WATCHED the big machines build subway, underpinning crews worked unseen in pits and cellars all along the building line. Underpinning structures along the narrow way was no small part of the job.

Miles of underpinning keep business district out of subway

George Goodwin
Middletown, Ohio

A MILLION DOLLARS WORTH of underpinning went into the first mile of Toronto's Yonge St. subway (ENR, June 29, 1950, p. 36).

This was a tenth of the total contract, which is held by Pitts, Johnson, Drake and Perini, joint venturers.

Located in a relatively narrow main thoroughfare of the city's downtown district, the initial stretch of subway is flanked by buildings throughout its length.

Because most ground conditions were favorable, the job was essentially a year-long exercise in straightforward underpinning methods. Ground conditions, together with the buildings, the subway excavation and the underpinning's main features, are described below.

The basic underpinning unit was the rectangular concrete pier, placed in hand-excavated cribbed pits.

Access to pier pits was by conventional approach pits, dug from either outside or inside the building to be underpinned.

• **Pit protection**—Horizontal cribbing sets, or rings, of 2x10-in. spruce plank protected the approach pits, which usually were 3x4-ft in plan. Where underpinning pits' maximum dimension did not exceed 4 ft, the 2x10-in. cribbing also was used. For greater spans, 3x10-in. sets were used.

Close cribbing (no space between rings) was used in the top layer of heterogeneous material. When clay was reached, 4-in. space was left between rings to allow access for repacking behind the boards (thus preventing ultimate ground movement).

• **Load transfer**—Approach-pit evacuation proceeded alongside the existing foundation to a point about 6 ft below the footing. Then workmen mined enough material to permit installation of rakers (6x12-in. fir or 6-in. pipe) to transfer footing loads to

UNDERPINNING CONDITIONS ALONG YONGE ST., TORONTO, WHERE CANADA'S FIRST SUBWAY IS UNDER CONSTRUCTION

Ground: top layer, heterogeneous material with few boulders—about 10 ft; second layer, clay—about 25 ft, ranging from soft to hard as depth increased; third layer, shale. Clay's supporting value is 3 tons per sq ft

Building types: (a) modern, with concrete foundation walls and footing; (b) older, with well-built brick or stone masonry cellar walls and foundations; (c) old building with poorly built cellar walls—some of them of mortarless rubble.

The excavation: subway excavation depth varies up to 35 ft, its width varying from 32½ to 52 ft (the latter dimension applies at stations). Basic protection afforded by 40-ft H-beam soldiers, with horizontal lagging to hold back earth. (Braced at street level).

The underpinning: Piers at main-load points. Spacing varies from 15 to 20 ft. Size, governed by support value of clay (rather than by cross-sectional area needed to carry the load) varies from 3x4 ft to 6x12 ft. Depth is governed by intersection of outside pier line with a 45-deg line up from a point 1 ft below bottom edge of subway excavation. Where foundation walls take direct bearing from first-floor joists, or where foundations are weak, underpinning is elaborated by reinforced concrete beams that span between underpinning piers. These beams bear on seats boxed-out in the piers.

the back of the approach pit. Then they went in and began sinking the pier pit.

Most of the large pits (6x12-ft) were sunk in two or three sections, all from the same approach pit. Each pit section was concreted, wedged and dry packed before the next one was dug.

In some cases, however, favorable conditions allowed sinking a large pit in one operation. Here it was necessary to provide additional temporary support for existing foundations. Rakers then were used on all sides of the pit, being supported either on plank sills behind the cribbing or on the cribbing itself. In the latter case, the crib ring carrying the load would be posted to the ring below and so on to the bottom.

• **Excavation experience**—Men worked in pairs in ordinary size holes. They could dig 3 to 4 ft of 4x4-ft pits in an 8-hr shift. The deep and large holes required four men. Hand tools and air spades were used. Little water was encountered.

Spoil was raised in large pails, by rope running through a well wheel attached to a pit frame. Spoil taken from the pit was piled at the curb and shoveled into trucks for removal.

In the case of outdoor access, the headframe was part of a fence around the approach pit. At night, fence and headframe were removed and the whole planked over to reduce impediment to pedestrian traffic.

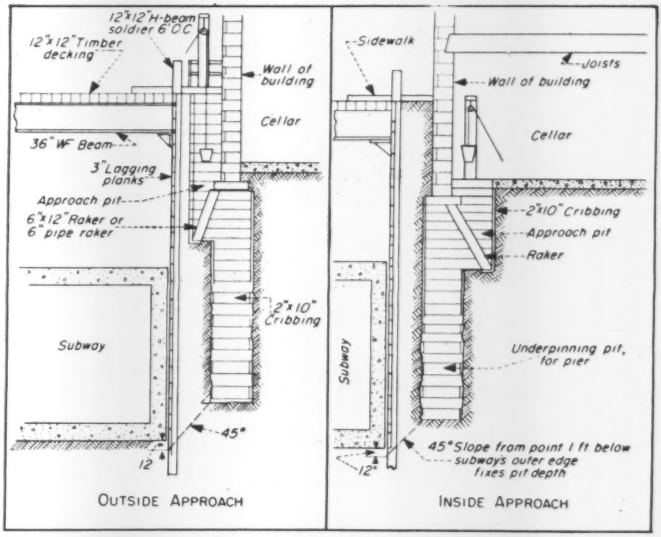
For inside access, of course, it was not necessary to do this extra work. For this reason, and because approach pits did not have to be so deep, the inside approach was used wherever possible.

Another source of improved efficiency inherent in a job of this size was the number of piers that were under construction at one time. When delays, such as those due to broken water or sewer pipes, occurred, it was possible to shift crews to other pits during repairs.

• **Pier construction**—When a pit was excavated it was filled with concrete to within 3 in. of the foundation to be supported (2,500 or 3,000-lb concrete with 4½-in. slump).

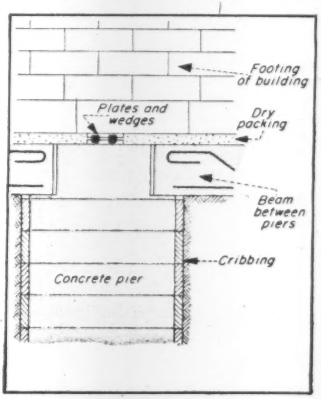
After a minimum of 48 hours, two 12x12x1-in. steel plates were inserted in the 3-in. space and forced to bearing with steel wedges sledged between the plates. The remaining space then was dry-packed with a slightly damp mix of three parts sand to one part cement.

The large piers were difficult to dry-pack from the approach pit. In such cases concrete was placed to within 2 ft of the footing. Then two or three 12-in. H-beam stubs were placed between plates, and wedges were driven home after two heavy jacks had taken up most of the load. Next, concrete was brought up around the steel, to within 3 in., then dry-packed.



TWO APPROACHES to the underpinning problem. Preferred method was to work from building's cellar, because the approach pits could be shallower and obstructing pedestrians wasn't a problem.

• **Underpinning Beams**—Where foundation walls required continuous support, seats were boxed-out at the top of adjacent piers and reinforced concrete beams were built under the walls, to bear on the pier seat. Access for beam construction was obtained by digging a trench alongside a face of the foundation wall, transferring wall weight to back of trench, on rakers, and undermining the wall. As with the piers, beams were placed to a point 3 in. below the wall. Load-transfer was effected by dry packing.



LOAD TRANSFER to piers and (where necessary) to beams was effected by steel plates and wedges, plus dry-packed mortar.

Concrete placement was by chutes and elephant trunks, from transit-mix trucks. Chutes frequently impeded pedestrian traffic on the sidewalk; and placement was slow, requiring manual labor at various points to assure concrete flow. Perhaps the difficulty could be eliminated by use of a pressure hose of, say, 6 in. size attached to the mixer drum. Compressed air inside the drum (aided by gravity) could force the concrete to place most efficiently.

Backfill—After piers were built and loaded, approach pits were backfilled. Backfill was placed in 6-in. layers and tamped, either by hand or by pneumatic tampers. Sidewalks or cellar floors were replaced and the job was complete.

This contract covers one mile of a 4½-mile two-track subway line.

Joint venturers are C. A. Pitts, Toronto, Arthur A. Johnson Corp., Long Island City, New York, Johnson Drake & Piper, New York, and B. Perini & Sons, Inc., Framingham, Mass. Charles B. Molineaux is general manager for the syndicate. The writer was a construction foreman on the underpinning work.

Owner is the Toronto Transportation Commission: H. C. Patten, manager; W. H. Paterson, chief engineer.

ROCKMASTER "16" TIMINGS

Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

Split . . . a . . . second the ROCKMASTER way

and you get Controlled Blasting

THE ROCKMASTER blasting system offers you a choice of *sixteen* split-second delay detonators. Fit the right ones for your job into the complete system—including the correct explosive, drilling pattern and loading procedure—and you've got the key to a smooth flow of blasting power that can mean true

***controlled* force . . . *controlled* throw . . . *controlled* breakage.**

We help you tailor the system to fit your requirements, often with substantial savings in drilling and dynamite, too.

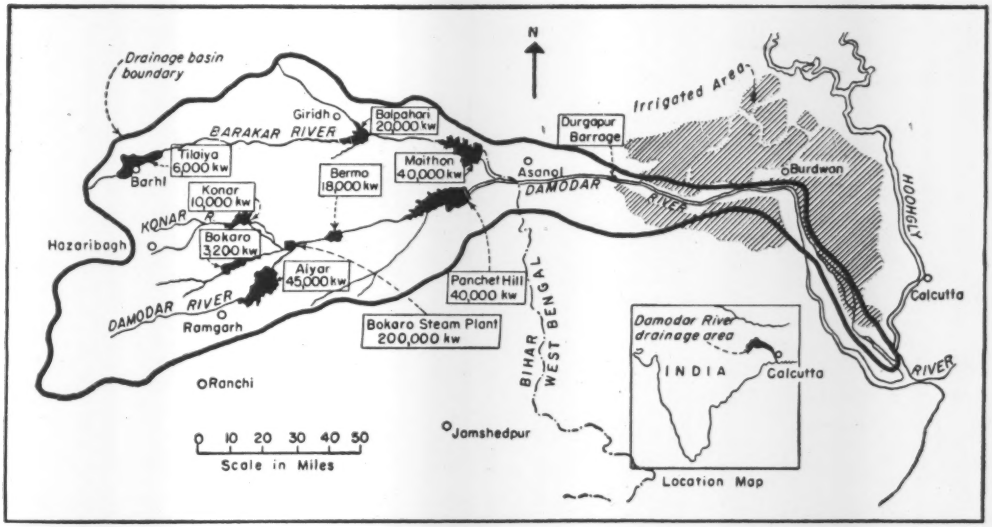
ROCKMASTER may be the answer to your problems whether you blast coal, rock, ore . . . on the surface or underground. Write for your free copy of the ROCKMASTER "16" booklet that includes diagrams of typical loading in quarries, strip pits, mines, and many types of construction.

ROCKMASTER: Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES *"Everything for Blasting"*

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington, Del. • *Offices in principal cities* • *Cable Address—Atpowco*



Current construction of two dams and a steam power station in this Damodar River valley represents a start on a $142 million project envisioned as . . .

India's TVA

Waldo G. Bowman
Editor

OF THE SEVERAL river development plans upon which the new republic of India has based its hopes for a raised standard of living, one is in a class by itself.

Sited in the Damodar River valley west of Calcutta, and tagged with a $142 million ultimate cost, it is a full multi-purpose multi-dam scheme, the only one on the country's present docket. And while none of its facilities is apt to be outstanding technically, the whole project is sure to have economic—and perhaps political—consequences of a far-reaching nature. That, in fact, is what gives its engineering such commanding importance.

The economic impact of the project—generally referred to as India's TVA—is inherent in the nature of the 330-mile-long valley and the contiguous territory extending perhaps 100 miles north and south of the drainage basin limits. This area, which could be served with Damodar power, encompasses the most highly industrialized region in India. Moreover, its hills contain 85% of the world's best mica, 75 percent of India's coal deposits, most of its iron ore and substantial deposits of manganese, copper, limestone, bauxite, asbestos and chrome. Jamshedpur, India's Pittsburgh, where 90 percent of its steel is produced, is ready to take a third of the initial power production, the coal fields—for mine mechanization—as much as a half.

The lower part of the valley is devoted to jute growing and to rice paddies that can produce only one crop a year—during the wet season— and frequently none, when devastating floods occur. With perennial water, assured by reservoirs, a million acres can be irrigated, for two crops a year, against the 185,000 that are presently served. The upper part of the valley, in addition to containing the coal and other minerals, is also potential farm land for other crops than rice, once erosion control is instituted by small retention dams and sound agricultural practices. More scientific forestry in this area will also increase the shellac yield from lac trees and grow more bamboo for pulp.

The whole setup is thus ideal for a basin-wide development scheme. That the envisioned economic improvements are so easily attainable from a technical standpoint is what makes the Damodar scheme important politically. It can give India's economy a quick, powerful lift, but—and for this very reason—if it fails, the political repercussions against the present administration could have far-reaching consequences.

• **Origin of the scheme**—The Damodar Valley project was born of the great 1943 flood, when it was conceded that only upstream dams and reservoirs could prevent recurrence of such disasters. It was quickly apparent that the stored water could also be used for hydro power and irrigation, thus giving the project a multi-purpose character.

The outgrowth of the planning was the creation by the Indian parliament in 1948 of the Damodar Valley Corporation, modeled directly on America's Tennessee Valley Authority. It is administered by a board of three directors appointed by the central government, and its capital is supplied by the government and the two states involved—Bihar and West Bengal. The DVC will derive revenues from the sale of power and of irrigation water and from navigation fees.

• **What is involved**—But even before the creation of the DVC, the central government had drawn up the broad outline of a 10-year unified development plan for the valley. As shown on the accompanying map, eight storage dams, each with a power plant, were envisioned for the 7,000 sq mi upper valley—above the confluence of the Damodar and the Baraker rivers. This hydro power would total 182,200 kw, to which would be added two hydro plants, without storage, on the Konar River with a combined capacity of 16,750 kw.

Matching these hydro plants in ca-

STEEL ERECTION on the 200,000 kw Bokaro steam power station is being done with long-boomed American crawler cranes. The concrete mixing plants are of French origin. A World Bank loan is aiding this element of the Damodar Valley scheme.

pacity there would be a 200,000 kw steam plant located in one of the valley's coal fields, planned to even out the seasonal variations in hydro generation. It is estimated that the hydro system can provide about 100,000 kw of firm power at a 60 percent load factor and this, plus the steam power, will provide about 300,000 kw of firm power from the Damodar Valley system. According to the plan, the steam plant will carry the base load for 37 weeks of the year, and the hydro plants for the remaining 15 weeks—during the monsoon season.

Although flood control for the lower valley will be centered in the two largest and farthest downstream of the reservoirs—Panchet Hill and Maithon on the Damodar and Baraker rivers, respectively, just above their confluence—the upper valley reservoirs will also contribute to the required total storage—about 5 million acre-ft. Two of these dams—Balpahari and Tilaiya—will be on the Baraker. Four of them—Bermo, Aivar, Bokaro and Konar—will be on the Damodar and tributaries.

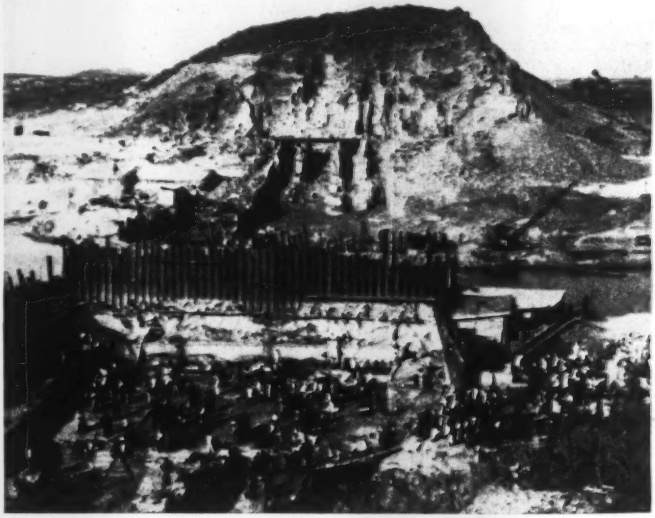
Water for irrigation, released from this system through Panchet Hill and Maithon dams, will flow about 40 miles down the Damodar to a diversion dam at Durgapur. As planned, the irrigation net in the lower valley would include 477 miles of main and branch canals. It would provide water for 967,000 acres, including about 185,000 acres now irrigated by existing canals only during the monsoon season.

A final facility included in the original plan is a navigation canal 80 miles long paralleling the river from the weir or barrage at Durgapur to Burdwan, and then going straight east to join the Hooghly River north of Calcutta.

All of these elements have been retained by the DVC, which in fact has added another—correction of erosion in the upper valley and reclamation of the land for farming and better forestry. Since the eight reservoirs will submerge a total of 175 sq mi, resettlement of families that will have to move out offers an excellent opportunity for the government to set up demonstration projects in both housing and agriculture.

• **How DVC operates**—At the outset, DVC decided to appoint consulting engineers to handle dam design and to supervise construction. It stated its intention of letting the dam jobs to contract and of employing an experienced chief engineer to direct the work and to assemble and train a DVC technical staff. In this latter connection it planned to assign a number of carefully selected Indians to the several consultants and contractors to the end that they would later be able to assume responsible positions in the organization.

Despite rivalries between DVC and other central government departments and criticism from the Indian engineering profession for hiring foreign engineers, the DVC has made some progress in carrying out these intentions. For example, it has established a three-man consulting board—two Americans—L. F. Harza and S. O. Harper—and an Indian—A. R. Venkatachari, state irrigation engineer of Madras. A chief engineer has been appointed in the person of another



FOREIGN VISITORS' DAY finds workmen concreting Tilaiya Dam foundations with hand baskets. Mechanized operations will be substituted when mass concreting gets under way.

American, A. M. Komora. As to job consultants, the Kuljian Corp. of Philadelphia has been selected for the Bokaro steam plant; Gruner Brothers of Basel, Switzerland for the Konar Dam; and Harza Engineering Co. of Chicago for Maithon Dam. Design on Tilaiya Dam, now under construction, was handled by the DVC staff and the consulting board.

• **Precedence to the steam plant**—Because the largest block of firm power resided in the steam power plant at Bokaro—and also the best opportunity for quick revenue—this work was the first to be undertaken, and the job to be pushed hardest. An immediate assured market for the power won for this facility an $18.5 million loan from the World Bank, which has contributed substantially to the progress of the job.

There are three parts to the project: (1) the Bokaro steam power station itself, with an initial installation of three 50,000 kw units; (2) Konar dam, an earthfill structure on the Konar River about 12 miles from the power plant whose reservoir will assure cooling water for the plant; and (3) a total of 477 miles of transmission lines with the necessary substations. The total cost is estimated at $52.8 million of which $25.9 million is required to cover foreign purchases in dollars. The government has already provided $7.4 million of this and the World Bank loan will supply the remainder.

The steam plant is located on the Konar River about 4½ miles above its confluence with the Damodar and 4½ miles from the coal loading point of the mine that will supply the coal. Movement of the coal to the plant will be by aerial ropeway, and about 300,000 tons will have to be delivered annually. Water released from the Konar reservoir will be ponded by a small barrage (12 ft high and 2700 ft long) at the plant.

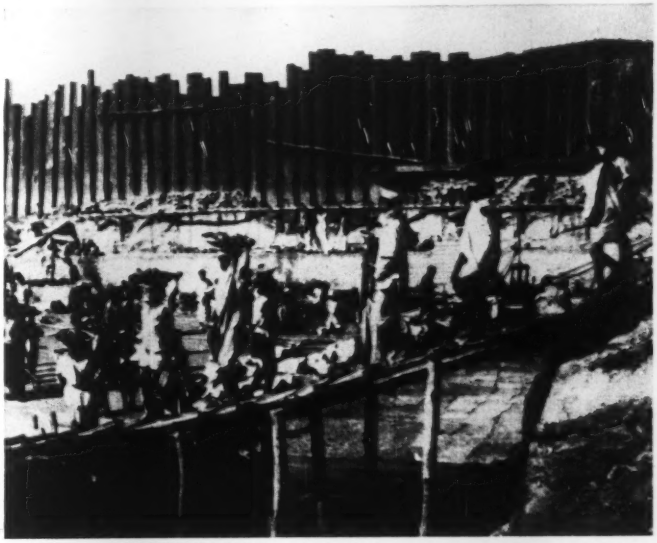
At present, work on the power plant is in the steel erection stage, and the river barrage is under way. Equipment installation will begin this summer, with the first unit scheduled for operation in August, 1952 and the others to follow at two month intervals.

Although the steam plant will be the largest and most modern in that part of the world it is not unusual by U. S. standards. Steam pressure of 850 psi from the 300,000-lb-per-hour boilers will be the highest in India, and the plant will be the first in that country to use pulverized coal.

International General Electric Co. has the prime contract to supply the generating units, the equipment for the coal, ash handling and water softening systems and the boilers, the latter being manufactured by the Combustion Engineering Co. IGE also supplied the designs for the powerhouse. The Kuljian Corp. not only serves as consulting and coordinating engineer, but has the contracts for the powerhouse erection and for installation of piping and wiring. R. L. E. Cook, an American contractor from Manila, is erecting the structural steel (supplied by the Bethlehem Steel Co.) and the boilers under subcontracts.

Work on Konar Dam is also under way by two Indian contractors—Hinds Construction Ltd. and Patel Engineering Co. Ltd. An earthfill structure about 12,600 ft long and 160 ft high, it includes a 900 ft concrete spillway section in the river portion and will create a 260,000 acre ft reservoir. There will also be a 10,000-kw powerhouse, and the stored water

Concreting at Tilaiya Dam



HUMAN CONVEYOR SYSTEM transports the concrete.

AGGREGATES are washed, measured and charged into mixer.

FUTURE FARM HOSE—Damodar Valley Corp. is resettling Tilaiya reservoir residents in housing like this—a big step upward from mud hut living.

will supply irrigation to about 50,000 acres.

Completion of Konar Dam and the Bokaro steam station will constitute what is referred to as stage 1 of the project. Sometime thereafter it is planned to build two more hydro plants on the Konar, which will have no storage but will use the regulated flow from Konar Dam. These plants will have a total capacity of 16,750 kw, and its is contemplated that the transmission lines will then be extended to Calcutta. Konar Dam was designed by a French firm, Societe de Construction des Batignolles, with revisions by Gruner Brothers, the consultants who are supervising its construction for the DVC.

• **The second dam**—As shown on the map, the DVC dams are divided between two main streams—the Damodar and its tributary, the Baraker. Konar Dam is up near the headwaters of the Damodar, and will therefore provide some protection for future dam construction downstream as well as a dependable water supply for that work. To assure these same advantages on the Baraker, its uppermost dam was also given priority. Known as Tilaiya Dam, it will be a concrete gravity structure 112 ft high and 1150 ft long. Creating a 300,000 acre-ft reservoir, the dam will assure water for 40,000 acres of farm land and will serve a 6,000 kw power plant.

At Tilaiya excavation is about 75 percent complete, all done by hand, but with the aid of air drills for the rock work. Good foundation is available, the dam being located where the river breaks through a rock hill that rises more than 150 ft above the river bed. Although the first lifts of concrete at the base of the dam were being put in by hand labor in January, batching, mixing and other equipment has since been installed, jumping output from 50 to 200 cu yd per day and now moving up toward 350.

• **Better living standards**—The necessity for moving nearly 4,000 families out of the Tilaiya reservoir area has been grasped by the DVC as an opportunity to demonstrate better living standards to the backward natives. As a matter of fact, one of the corporation's statutory functions is "the improvement of agriculture and of public health and the control of soil erosion."

Houses of sun-dried brick with plastered walls are being built for the displaced persons. Timber pole roofs covered with tiles, numerous windows, niches in the interior walls to be used as shelves and other little details are being incorporated in the hope that the resettled residents will influence others to build more convenient and sanitary housing.

In addition to new villages and farm houses, demonstration schemes of headwater control, contour plowing and crop rotation are being started. Four small dams have been completed to irrigate tracts from 50 to 300 acres in extent.

• **The outlook**—All of these activities —construction of Bokaro steam plant, Konar Dam and Tilaiya Dam—as well as the agricultural and resettlement demonstrations—spell progress toward the goal of an Indian TVA. Yet if one matches the degree of accomplishment to date against the pressing need for the food and the electric power that the Valley facilities can produce, the outlook does not measure up to the opportunity. Only the steam plant is moving along satisfactorily on schedule, and even here the hope to have the first generator go into service a year from now cannot be realized unless Konar Dam construction is speeding up so that cooling water will be available.

Both at Konar and at Tilaiya, progress had, until recently, been slowed by a lack of mechanized construction operations. Inability to get machinery played a part, but the more basic faults are inertia against change to modern methods and adherence to the principles of keeping the maximum number of laborers employed, of providing a training ground for Indian engineers and of avoiding the use of foreign contractors.

Thus—or so it seemed to many foreigners who visited the work during the international engineering conference in January—the Indian engineers are permitting their ambitions for Indian engineering to obscure their judgment in dealing with the basic economic problem of India. In the latter connection, for example, the DVC is still considering the use of force account operations to build Maithon dam. This job, which is already to go, will require the placing of 2½ million cubic yards of earth in eight months, that is, between monsoon season floods—obviously a task requiring experience, heavy equipment and big-job know-how, not yet available in India.

These difficulties—not unnatural for a new country anxious to stand on its own feet—will no doubt be overcome before the 10 years alloted to completion of the Damodar Valley scheme are passed. In the meantime, however, sure and swift progress waits on the perfection of organizational and financial plans and the resolving of conflicts of opinion over the utilization—in fact as well as in theory—of experienced foreign supervision.

Progress to date on the Damodar Valley scheme is mainly a matter of facing in the right direction and starting to move forward toward a sound and well-defined goal. For a country faced with as many obstacles as India, that in itself is a noteworthy accomplishment. And once the need for speed is accepted and implemented, the greatest of these obstacles will be passed. Then the Damodar Valley will begin to emerge in its true stature—a region whose produce of food and kilowatts not only lifts the whole economy of India, but whose example fixes the confidence of the people firmly in the country's overall river development program and the engineers whose privilege it is to carry it out.

It's Lighter... It's Faster... It's Tougher

It's the NEW

HOMELITE

ONE MAN
Chain Saw

Pays for Itself in No Time Clearing Out Wooded Land

27 Pounds
4 Horsepower
More Power Per Pound than any other saw

It's a one-man saw that does the work of other two-man saws. Cuts an 18 inch tree in 16 seconds. Cuts trees 48 inches or more in diameter. Has simple, safe controls; automatic clutch; automotive type carburetor; rainproof magneto and chrome-plated, perma-sharp, narrow kerf chain.

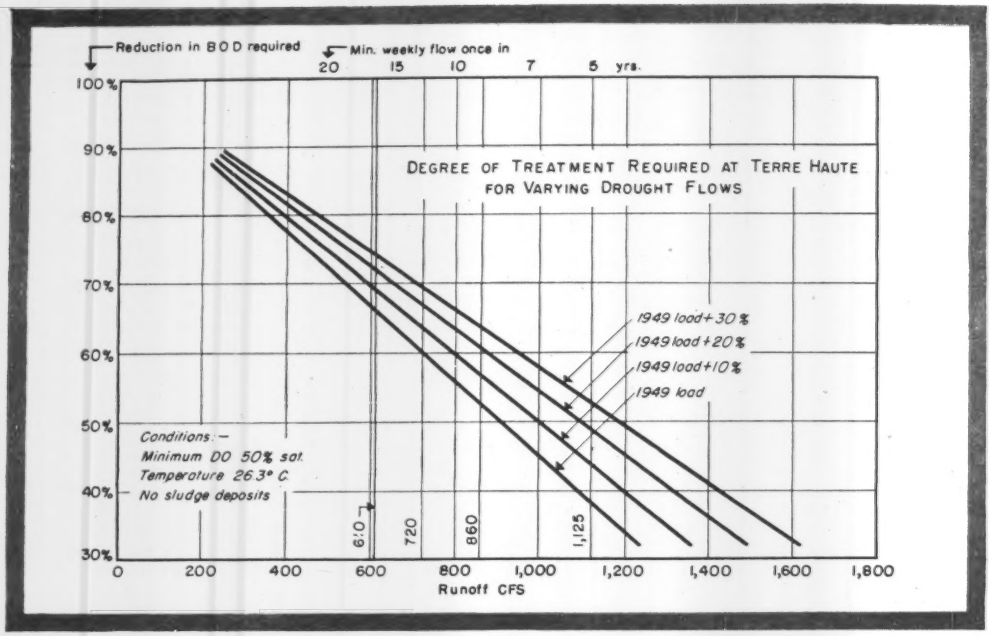
Remember, you can't start any building or construction job until the location is properly cleared. And with this new Homelite One Man Chain Saw, you can do your clearing in less time . . . with less labor . . . and at less cost. It's the fastest cutting, easiest handling saw ever developed. And it's a rugged, dependable saw that needs less maintenance, fewer repairs, than any other saw.

Weighing only 27 lbs . . . and perfectly balanced, with most weight close to operator's body . . . a Homelite handles perfectly on all types of cuts. Any man can operate it easily. Send for new, complete bulletin.

CARRYABLE
PUMPS • GENERATORS • BLOWERS • CHAIN SAWS

PERFORMANCE · DEPENDABILITY · SERVICE

HOMELITE
CORPORATION
1105 RIVERDALE AVENUE • PORT CHESTER, N. Y.



TREATMENT VS. RUNOFF—Example: A reduction of 52% in BOD of the 1949 pollution load is required to maintain critical dissolved oxygen of 50% saturation at an 860-cfs drought flow.

How much pollution can a river take?

It depends largely on low-flow probabilities —as Wabash River study shows

WASTE-DISPOSAL requirements depend on self-purification capacity and low-flow probabilities, according to a recent Ohio River Valley Water Sanitation report on the Wabash River. For instance:

Municipal and industrial waste facilities at Terre Haute must have capacity for (1) taking all of the settleable solids out of the city's domestic and industrial wastes and for (2) reducing their biochemical oxygen demand at least 52%. Such plant performance will insure not less than 50% dissolved-oxygen saturation in the Wabash River below this heavily industrialized Indiana city.

At Vincennes, Ind. (87 miles downstream) treatment of municipal and industrial wastes must remove almost all of the settleable solids. This will insure satisfactory DO content in the Wabash below the city—by precluding sludge deposits that consume oxygen.

These specific prescriptions for waste treatment were arrived at through an intense survey of a 130-mi stretch of the song-famed Wabash. Designed to define the self-purification capacity of this stretch, the survey consisted of (1) collection and analysis of hydrologic, waste-discharge and water-quality data; and (2) statistical evaluation of collected facts in terms of regulatory requirements. This evaluation involved forecast of dissolved-oxygen conditions in the river under various drought probabilities, pollution loads and water-quality objectives.

• **River facts**—Hydrologic data obtained included river cross sections, runoff records and water temperatures.

Cross sections of the river bed were taken to calculate occupied-channel volume, velocity of flow, mean depth and time-of-passage of pollution through any stretch of the river. Mean depth and time-of-passage are essential in studying natural-purification characteristics. The sections also disclose other physical characteristics, such as sludge deposits.

Cross sections were measured quickly—and precisely enough—for the use intended (ENR Jan. 5, 1950, p 40). Here's how it was done: River widths at 274 sections were scaled from U. S. Corps of Engineer maps. Normal distance between sections was one mile. Immediately below Terre Haute and Vincennes the interval was 0.25 mi (along stretches critical for oxygen content). Nine to eleven soundings were taken at each section. Soundings were referred to river stage at time of measurement. This permitted adjusting soundings to other runoff stages.

• **Drought flow**—A "must" factor in setting up treatment specifications is drought flow during which selected quality objectives are to be maintained. ORVWSC—in cooperation with Indiana and Illinois engineering agencies

—selected the once-in-ten-year drought as critical flow for which treatment requirements were to be set up. It was felt that it would be uneconomical to design treatment plants for more severe drought flows, such as occur at 25, 50 and 100-yr intervals.

A study of drought expectancies at Terre Haute showed that—once every ten years—drought flow will be equal to or less than 860 cfs (minimum-weekly-average flow). This conclusion was reached by applying Gumbel's statistical theory of extreme values to the 1928-48 runoff record at Terre Haute. Minimum-weekly-average flow was employed for the study because pollution takes about a week to pass through critical (oxygen depleted) reaches of the river at low flow.

The study of drought expectancies was done by C. J. Velz, professor of public health statistics, University of Michigan, who did it as an application of his rational method of stream analysis and forecast.

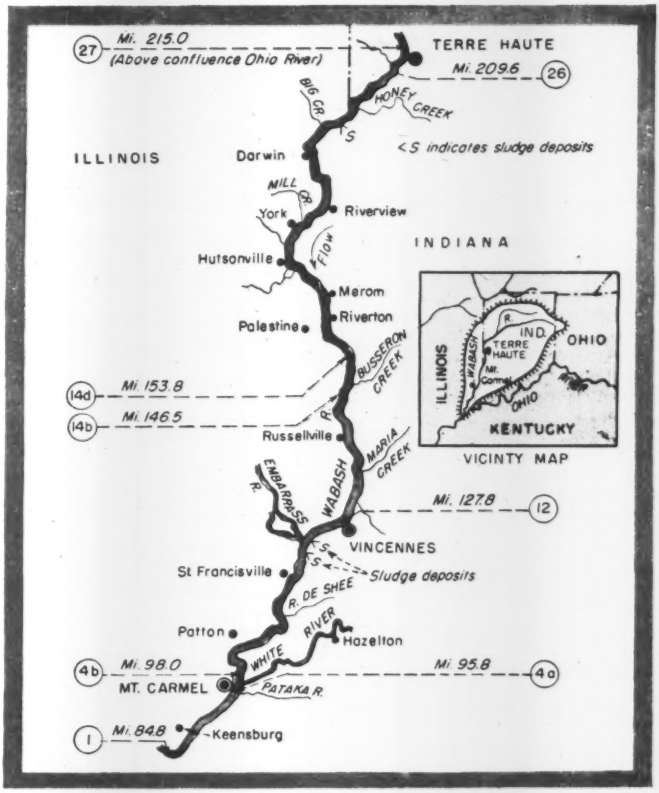
Runoff of the Wabash at Terre Haute and Vincennes was obtained from gaging stations of the U. S. Geological Survey. Daily hydrographs for two months in 1949 were drawn from these records. They gave average runoffs during river sampling: At Terre Haute for two five-day periods —2,520 cfs (Aug) and 1,980 cfs (Sept); and at Vincennes during 13-day sampling—3,050 cfs (Aug and Sept).

• **Water temperature**—The probability of droughts occurring in certain months was also investigated by Velz: Severe drought would occur most frequently in August and September. From the standpoint of maintaining suitable stream quality, August is the most critical month. It has the worst combination of low flows and high temperatures.

Average water temperature in August—26.3 deg C—was therefore employed in determining treatment requirements. Similar averages for July and September were 26.8 and 22.9. These figures were calculated from 26-yr river-temperature records at the Dresser Power Plant. This Public Service Company of Indiana facility is located five miles below Terre Haute.

• **City sizes**—Population data for the Wabash's principal cities were obtained from the Census Bureau. Analysis of these figures shows no firm trend for Terre Haute. Its population declined 5.1% from 1920 to 1940 but gained 2.2% by 1950 (64,000). For this reason, study of treatment needs at Terra Haute was confined to present population.

Population at Vincennes grew only 9.5% in 30 years. This present population figure (18,800) probably will change only moderately in the next two decades, it is felt.



THE WABASH RIVER SURVEY was made with 34 sampling stations in the 130-mile stretch between Mt. Carmel, Illinois and Terre Haute, Indiana.

• **Waste discharge** — Pollution loads emptying into the river from both cities were measured. The Terre Haute waste load (municipal and industrial) amounted to more than 622,000 population equivalents. (Population equivalent is number of people required to contribute wastes of equal total strength. It's calculated here on the basis of 0.167 lb of 5-day BOD per capita.)

The total ultimate oxygen demand of all wastes is 152,500 lb of oxygen per day. This is made up of municipal sewer wastes—51,500 lb and industrial —101,000 lb per day.

The Vincennes pollution load was 131,000 population equivalents for all wastes. The industrial load was 99,000 and the municipal 32,600 PE's.

Total ultimate oxygen demand of all Vincennes wastes was 32,300 lb per day with a ratio of 1-to-3 for municipal and industrial portions.

Pollution loads were measured after installing weirs in all outfall sewers—both municipal and industrial. Flows were computed for 48-to-96-hr periods from hourly gage readings.

Samples of the wastes were also taken hourly. Five-day BOD analyses were made on 24-hr composites of the samples.

• **River-water quality**—Intensive river sampling and analysis of samples lead to chemical, biological, bacteriological and physical findings:

1. Chemical—Analyses of river samples gave DO and BOD values of river water at the sampling points:

Below Terre Haute, BOD increased sharply and DO dropped, as expected, from source of pollution. The lowest DO was 70% saturation; high runoff precluded greater oxygen depletion in this sketch.

Waste discharges from Vincennes had little effect on oxygen condition

of the river at the righ runoff prevailing.

These data—DO and BOD results—formed the basis for projecting oxygen conditions that would prevail at other runoffs.

2. Biological—In analyzing natural purification characteristics, loss of dissolved oxygen in river samples kept in the dark, was found to exceed that which could be assigned to normal biochemical oxidation of organic matter. This loss was attributed to respiration of algae. (All samples allowed to stand in the light increased in DO concentration).

Plankton studies during field work showed that large numbers of chlorophyl-laceous algae existed in the river. Additional sampling was then carried out to evaluate effect of algae on DO content.

3. Bacteriological—Because of the high concentration of coliform organisms, chlorination of Terre Haute's wastes is advisable. This would reduce coliforms in water reaching Vincennes as well as improve the recreational potential of the stream.

4. Physical—Large quantities of tomatoes from canneries at Terre Haute floated down the river during sampling. These wastes, obnoxiously decaying, meant that an extra short-time pollution load was being placed on the stream.

The Wabash was highly turbid or muddy during the survey. Turbidity is caused apparently by soil erosion on the watershed.

Sludge deposits were spotted at seven locations in the surveyed stretch of river. In the Terre Haute area, these deposits would be a cause of critical oxygen depletion in the river under low flows.

Areas subject to sludge deposition under various runoffs were, therefore, figured theoretically on the basis of the river's hydraulic features. Field observations and sampling confirmed these findings.

• **River sampling**—Sampling of river was carried out in three steps: Intensive collection for four days in a 33-mi run just below Terre Haute (sta 27 to 18); completion of sampling in three stages downstream from sta 18 to 1; and check sampling in areas just below Terre Haute and Vincennes. All sampling to be done was completed in 25 days.

Samples were collected under near-steady runoff. This important feature of the survey was made possible by careful advance planning. Weather predictions by the U. S. Weather Bureau and daily reports of gage readings determined when samples would be collected. Samplings under steady runoff insured the most valuable data for statistical analysis; sampling under fluctuating runoff yields far less reliable data.

Samples were taken at each station three times daily, giving an approximate interval of eight hours. Times of collection were staggered by two hours from day to day so that samples were collected two hours later than they had been on the previous day. This gave sampling times spaced through a 24-hr period. More than 1,000 samples comprised the river survey.

River samples were taken from boats, bridges and ferries. Boats were anchored at river sections and crews traveled from station to station by auto.

Analyses made on river samples were: Temperature, pH, BOD, DO and MPN (most probable number) of coliforms. Temperatures are at time of sampling. DO determinations were started just as soon as samples had been taken, and they were completed in the field except for final titration. All other analyses were made in the laboratory.

Additional bacteriological work included analysis for enterococci organisms. Illinois in particular was interested in evaluating the correlation between enterococci and coliforms. Plotted curves of MPN's of enterococci organisms show parallelism to those of coliforms; ratios of their MPN's are about 1 to 100. This ratio is in agreement with previous findings of similar studies by Illinois bacteriologists.

ABOUT THE WABASH

The Wabash River with its tributaries drains a basin 33,100 square miles in area. Originating in Western Ohio near St. Mary's Lake, it flows west and then south across Indiana. From a point about 12 miles southwest of Terre Haute, Indiana, it forms the boundary between Indiana and Illinois. Terre Haute is 215 miles from the mouth of the Wabash, which empties into the Ohio near Mt. Vernon, Indiana. The river has a total length of 500 miles.

• **Interpretation of data**—Evaluation of stream pollution often ends with the sanitary field survey. The Wabash project went farther: A theoretical oxygen profile—using measured pollution loads and runoff at time of survey—was computed. (An oxygen profile shows dissolved oxygen at stations along the river).

This theoretical profile was checked against oxygen conditions actually observed in the river during sampling. Reasonable agreement between the theoretical and actual profiles showed that factors influencing de-oxygenation and reareation were being properly applied.

Oxygen profiles—for other runoffs and varying increases and decreases in pollution loads—were then computed. From these a series of curves were plotted that show—for a minimum DO level of 50% saturation in the river—amount of treatment of pollution load required for varying conditions of drought flow. For example, 52% treatment is needed at 860 cfs; 45% for 1,000 cfs (see headpiece).

• **Quality objectives**—The water-quality objective for the river was: Average 24-hr DO content of the water shall not be less than 50% saturation more often than once in ten years during the week of minimum flow. This meets the regulations of the Indiana Stream Pollution Control Board: "Generally the oxygen content of the receiving water, after being mixed with and affected by waste, shall be no less than 50% saturation. A lower concentration will be tolerated temporarily only so long as it is not injurious to aquatic life, and in no case shall it fall below 25% saturation."

The quality objective of 50% saturation also satisfies conditions desired by Illinois' authorities. They want assurance that fish life in the Wabash will be protected.

• **Credits**—Sponsored by the Ohio River Valley Water Sanitation Commission, the survey had cooperation of eight other organizations.

ORVWSC representatives were: E. J. Cleary, executive director and chief engineer, and R. K. Horton, sanitary engineer, who, as project director, coordinated all activities and wrote the final report, the basis for this abstract.

Cooperating and participating agencies were: The Indiana Stream Pollution Control Board—B. A. Poole, technical secretary; Indiana Health Department—R. H. Holtje, sanitary engineer; Illinois Health Department—C. W. Klassen, chief sanitary engineer, W. A. Hasfurther, sanitary engineer and R. M. Scott, bacteriologist; National Council for Stream Improvement which furnished the services of Professors C. J. Velz and Don E. Bloodgood; Terre Haute Paper Co. which furnished laboratory space and facilities for analytical work; U. S. Geological Survey; U. S. Corps of Engineers; and U. S. Public Health Service through which the services of Maurice LeBosquet, Jr. were obtained. He served as consultant in analysis and interpretation of data.

Govan, Ferguson, Lindsay, Kaminker, Maw, Langley and Keenleyside, Architects

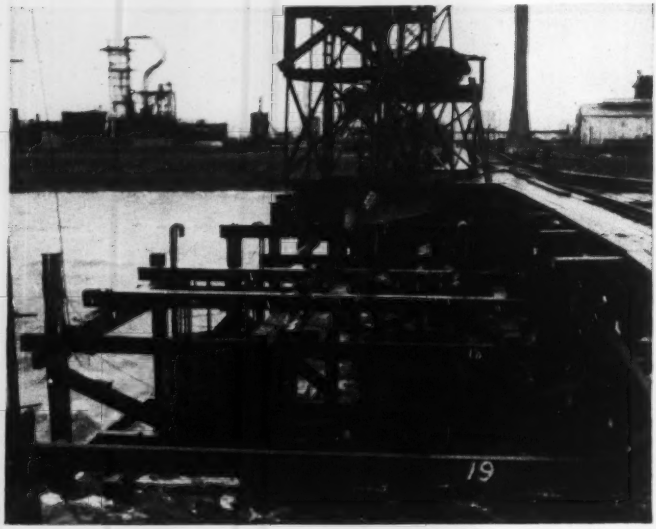
THE HOSPITAL FOR SICK CHILDREN

EQUIPPED FOR MODERN MIRACLES

Stone & Webster Engineering Corporation was retained as Project Manager during the planning stage of the Hospital for Sick Children in Toronto and later supervised and directed the construction. This hospital provides the most modern facilities for the care of sick children and for medical research and instruction.

STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INC.



REINFORCED CONCRETE CYLINDERS support the new jetty for an oil refinery along the banks of the Thames River. Prestressed, precast concrete is used for beams and fenders. Decking, placed later, is also of precast concrete.

British oil dock incorporates unusual fenders, foundations

A MILLION DOLLAR addition to the facilities of the Thames Estuary, near London, England, is now under construction: A new type of oil jetty that will form an important link in the oil supply chain to a new refinery in Essex.

The designers say that the new addition is unique in two ways—its construction and fender equipment.

The construction involves a series of reinforced concrete cylinders sunk into the river bed by heavy weights, with prestressed, precast concrete used for beams and for horizontal fenders.

The fenders, based on a patent held by Prof. A. L. L. Baker, are each suspended with four chains and absorb an energy of up to 270 foot-tons by an inward and upward movement. (An article in ENGINEERING NEWS-RECORD, May 25, 1950, p. 34 described the fender's principle.)

Six fenders are suspended beneath the jetty deck with 1¼-in. chains. They protrude 6 ft at the front and 2 ft at the back of the jetty.

• **L-shaped**—The new jetty is L-shaped, the approach being 414 ft long and 23 ft wide, the head 240 ft long and 40 ft wide.

Both approach and head will be supported on 8-ft dia concrete cylinders, assembled from precast sections, each 8 ft long. The sections are spigot jointed, and the lower edge of the bottom section is fitted with a steel cutting edge for penetrating the river bed.

• **Weights used**—The cylinders are sunk into the river bed to a depth of about 34 ft by heavy weights (about 120 tons on each cylinder) and mucking, and then filled with concrete (about 2,200 cu yd of concrete being used to fill all of them). There are five 77-ft clear spans on the approach, each resting on a single cylinder, with the exception of the out river span which rests on two cylinders. Each span consists of two precast, prestressed concrete beams of I-section. The beams are being made in three lengths on the shore, and after they have been placed in position on suitable falsework, prestressing cables will be threaded through to form one continuous member.

The jetty head is to be supported on three cylinder clusters, each consisting of six cylinders about 70 ft long—three on the out river side and three on the inshore side. Each pair of cylinders is connected with a cast-in-place prestressed concrete box beam, 9 ft wide x 8 ft 6 in. deep by 40 ft long. Each of the clusters is spanned by five prestressed concrete beams of I-section. Unlike practice for approach beams, these box beams are cast all in one length.

The decking throughout the jetty consists of precast concrete slabs. In the approach the slabs are 23 ft long by 2 ft wide by 5 in. thick; those on the head are 9 ft by 2 ft by 4 in.

General contract for construction is held by John Mowlen & Co., London; marine and engineering consultants are Thomas C. Rolland and L. G. Mouchel & Partners. Fenders were designed in conjunction with Port and Harbor Fenders, Ltd.

No program break as radio tower is lifted

When the porcelain insulator at the base of a 647 ft antenna tower for radio stations CBL and CJBC, Toronto, Canada was found to be cracked engineers had to tackle the problem of replacing it without taking the radio stations off the air.

The porcelain insulator carries the full weight of the tower and the pull of the guy wires—a load of 110 tons. The insulator itself is a cone of hard-fired porcelain, 15 in. high, 16½ in. in diameter at the top and 8¼ in. at its base. It had been in service for more than 13 years.

The first problem was to obtain a special insulator similar to the cracked one, with all necessary fittings. Meanwhile, preparations were made for substitute antenna for the two stations, for standby transmitters, shifting the transformer which supplied power for the aircraft warning lights on the tower, and substituting a new electrical lead from the transmitter, moving this wire to a position higher up on the tower.

It was decided to lift the tower. The work was done on a windless night. Steel beams were bolted to the sides of the tower, parallel with the ground. Beneath these, a crib-work of foot-square timbers and steel I beams was built, while manually operated jacks were placed in position.

When the time came to replace the insulator—late in November—two guy wires attached to the 300 ft level of the tower was slacked off about 3 in. Then the opposing pair was slacked off, the slack being taken up as quickly as possible as the hoisting jacks at the base were brought into action. These guy wires were slacked off again, pair by pair, to a maximum of 5¼ in., and the tower and cable were finally hoisted by this means to the necessary 3 in. above the base.

The insulator was then removed, the new one installed, and the hoisting process reversed.

We Mobilize for Freedom

WHY Controls are Necessary

One of the encouraging characteristics of the American people is their dislike for government controls. This augurs well for the future of their economic and political freedom.

But for the next few years we must not only tolerate but also help to make effective a whole battery of emergency government controls over our economic life. If we fail to do this now the future of that freedom we cherish will be imperilled. It is the purpose of this editorial—the third in a special series—to explain in simple terms why this is so.

After our military victory in World War II, we rushed through a demobilization which cut our military strength to about one-tenth of its wartime peak. Our allies did much the same thing. But the Russians maintained much of their wartime military strength and built up that of their satellites. With prodigious speed we switched from military to civilian production and went on to enjoy a rousing postwar boom—the greatest in our history.

This boom was in vigorous progress when, on June 25 last year, the Russian-sponsored North Korean army attacked South Korea. Our industrial production was rolling along at almost twice its prewar level. We had labor shortages in many key industrial areas. Under the impact of heavy buying all along the line, prices were climbing.

When the North Koreans smashed into South Korea they smashed into our national consciousness this fact: if we want a fair chance to save our national freedom from destruction by Communist aggression, we must race to restore some of the military power we had so speedily written off after World War II. And we must do it with our resources already very fully occupied with a boom in civilian business.

Program Small Compared to World War II

Compared with our military effort in World War II, the mobilization on which we are now embarked is small. At its peak, under present schedules, it will absorb no more than one-fifth of the total national production. During World War II we reached a point when nearly half of our total production went for war-making.

Moreover, our economy now is much bigger and stronger than it was in World War II. During the last decade there has been an increase of about 15 percent in our labor force. Our workers have had the training advantage of steady employment. The capacity of our industrial establishment is two-thirds again as great as it was ten years ago. Since the war no less than $70 billion has been spent to expand and modernize it.

Given time, the industrial giant we have created could pick up in its stride the added load of production for defense that now is con-

templated. But speed is of the very essence. There is little dissent from the proposition that if we are to stand off Russian aggression successfully we have, at the outside, two years in which to get ready.

Controls Needed to Prevent Chaos

These two facts – (1) the necessity for speed in our rearmament program and (2) an economy already stretched taut by a record civilian boom—create the general necessity for government controls. If we simply pile the billions of added defense expenditures authorized since last June on top of the civilian boom, and let it go at that, two destructive developments would follow. There would be a scramble for scarce materials, notably metals, which would create chaos in those markets. And prices would go through the roof.

Our situation during this mobilization is radically different from what it was when we rushed to get ready for World War II. Then we started with an economy that was coming out of a long depression. There was plenty of slack. Even in mid-1941 we still had over 6 million unemployed. Thus it was possible for us to expand war production greatly and also increase civilian living standards before the limits of our productive capacity made extensive controls necessary. But as we begin this new mobilization we find our economy already operating virtually at capacity. This fact is of key importance in understanding why this relatively small defense program so quickly requires the imposition of controls.

The selection and administration of controls thus far has been badly bungled. The threat of price controls, for example, was broadcast so vigorously and for so long that our people were virtually asked to raise prices and thereby do much to defeat the controls. Adequate taxation directed so as to attack inflation at the source and thus give direct price control a chance to operate has not yet been provided.

Indeed, we could readily assemble a long and devastating catalog of the deficiencies of the government's control program. But that would not dispose of the necessity for controls – by priority, by allocation, and, as a stop-gap, by direct prescription of selling prices – if we are to carry out our mobilization successfully. That is the only means by which a clear right of way for defense production can be cut through the highways of trade and commerce now jammed with civilian boom business.

Hope In The Wilson Plan

Since he became Director of Mobilization, Charles E. Wilson has added a new element of order and hopefulness to the mobilization program. He has laid out a plan which, if we are spared all-out war, would do three things by 1953. First, it would produce the weapons needed by our army and our allies to meet an immediate threat. Second, it would create the capacity that would enable us to move at high speed into weapons production for all-out war – if necessary. Third, it would create the additional production capacity that would restore by that date our ability to resume the climb of the American civilian standard of living.

In technical and industrial terms the Wilson Plan seems to be feasible. If it is successfully carried out, we should be able to begin getting rid of controls rapidly by 1953. But to carry out the program successfully, it must now have vigorous support from everyone. That does not mean mere agreement that it is a good plan. It means that we must conform to the controls that are necessary to make the plan work. In developing this support, the business community is in position to exercise crucially important leadership.

As has often happened in our national history, we are confronted by a paradox. We must accept emergency controls for the time being to insure survival of the freedom that they infringe. But, as we do this, we may find some comfort in the reflection that while controls from Washington are hateful, controls from Moscow would be infinitely worse.

McGraw-Hill Publishing Company, Inc.

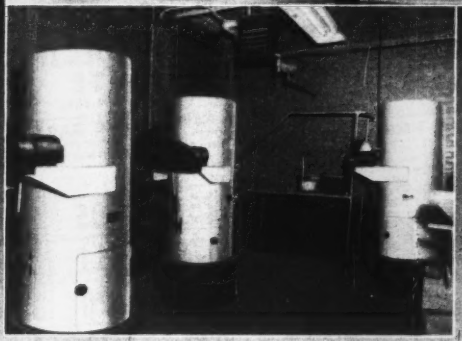
COVINGTON, GA.

Water Treatment Plant

(COMPLETED IN 1948)

WIEDEMAN & SINGLETON
Engineers
Atlanta, Ga.

A. H. GUION & CO.
Contractors
Charlotte, N. C.



B-I-F Industries equipment furnished for the Covington Water Treatment Plant:

Omega Universal Feeders with extension Hoppers and High Speed Mixers for feeding alum and lime.

8" Builders Model RCE Controllers with Loss of Head and Rate of Flow Gauges for filter effluent.

Builders Float Operated Clearwell Depth Gauge.

10" Builders Propelofio Meter with Totalizer-Indicator-Recorder for Raw Water.

12" Builders Venturi Tube with Type "M" Totalizer-Indicator-Recorder for High Service.

The Peachtree State can now boast of another fine water treatment plant — this one at Covington, Ga. The Covington plant is new inside and out. Its building is of modern, factory-type construction . . . designed to give years of able, efficient service to the community. Operating equipment in the plant is of the latest type, having a maximum capacity of 1.5 MGD to supply a population of 10,000 people and to satisfy the industrial demands of the area.

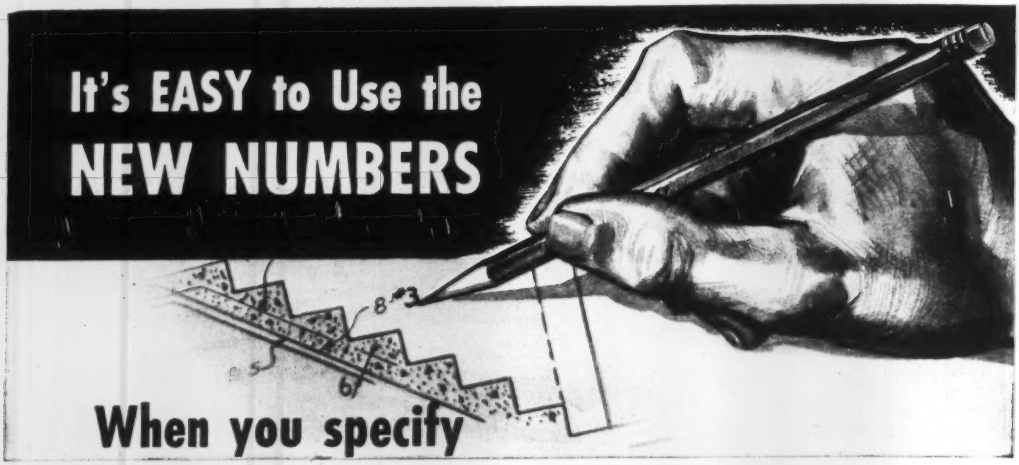
Omega water works equipment was specified by the engineers, Wiedeman and Singleton, for the Covington Water Treatment Plant. Omega Universal Feeders deliver the coagulants and pH control chemicals required by the treatment process, at rates commensurate with the daily water demands and the particular characteristics of the raw water being treated. For Bulletins describing Omega water works equipment, address Omega Machine Company (Division of Builders Iron Foundry), Providence 1, R. I.

B-I-F INDUSTRIES

OMEGA
THE LAST WORD IN FEEDERS

OMEGA

It's EASY to Use the NEW NUMBERS



When you specify

A305 *IMPROVED* REINFORCING BARS

For years it has been customary to designate the size of reinforcing bars by their diameter—¼", ⅜", etc. Square bars were designated by the width of one side.

Now, with the improved A305 bars, numbers from 2 to 11 are used to designate bar sizes. These numbers denote the nominal diameter of the bar in eighths of an inch. However, as the new bars have the same cross-sectional area as the old bars, design tables do not need to be changed. The #3 bar, for example (nominal diameter ⅜") has the same weight per foot as a ⅜" plain round bar. Bars #9, #10, and #11 are round bars equivalent in weight and nominal cross-sectional area to the former 1", 1⅛", and 1¼" square bars.

The accompanying bar chart explains these new designations.

Write for your FREE Copy of this New Bar Card

CONCRETE REINFORCING STEEL INSTITUTE

38 SOUTH DEARBORN STREET, CHICAGO 3, ILLINOIS

STANDARD A305 REINFORCING BARS

BAR SIZES		WEIGHT	NOMINAL DIMENSIONS — ROUND SECTIONS		
OLD (INCHES)	NEW (NUMBERS)	POUNDS PER FOOT	DIAMETER INCHES	CROSS SECTIONAL AREA - SQ. INCHES	PERIMETER INCHES
¼	2	.167	.250	.05	.786
⅜	3	.376	.375	.11	1.178
½	4	.668	.500	.20	1.571
⅝	5	1.043	.625	.31	1.963
¾	6	1.502	.750	.44	2.356
⅞	7	2.044	.875	.60	2.749
1	8	2.670	1.000	.79	3.142
1	9	3.400	1.128	1.00	3.544
1⅛	10	4.303	1.270	1.27	3.990
1¼	11	5.313	1.410	1.56	4.430

The new bar numbers are based on the number of 1/8 inches included in the nominal diameter of the bar.

Bar number 2 in plain rounds only. Bars numbered 9, 10 and 11 are round bars and equivalent in weight and nominal cross-sectional area to the old type 1", 1-1/8" and 1-1/4" square bars.

The above weights are adopted as standards by the Institute in 1934 and supersede former practice. These weights have been approved through the U.S. Department of Commerce Simplified Practice Recommendation R 26-50.

CONCRETE REINFORCING STEEL INSTITUTE • 38 S. Dearborn St., Chicago 3

READER COMMENT

Tilt-up erection not new

Sir: Under the heading, "Next step for arches," Prof. M. W. Jackson in the April 5 issue, p 45, suggests extending the tilt-up method of construction to two and three-hinged arches by precasting the ribs for such arches at ground level and then hoisting them into position.

This was the standard procedure for constructing the Thomas patented three-hinged arch. Several important arched highway bridges were constructed in this manner in southern California about a decade after the turn of the century. Construction views were published locally showing the arch ribs lying on the ground, being hoisted, and in final position.

Details of the Thomas patent should be obtainable from the U. S. Patent office files.

RALPH W. STEWART
Los Angeles, Calif.

Fine wires uneconomical

Sir: In reference to P. W. Abeles' article on prestressed concrete (ENR April 12, p 42), I would like to point out that the use of single wires, bonded or unbonded, of 0.2 in. dia is uneconomical in this country. Smulski was greatly handicapped in the early part of the century when he tried to introduce his system of flat slabs to the New York market because he specified ¾-in. dia rods weighing one pound per foot. It was found that the handling cost was prohibitive compared with heavier rods.

A 0.2-in. wire weighs about one tenth of a ¾-in. rod!

On several jobs that were analyzed, it was found that the price per pound of 0.2-in. wire, in place, amounts to five to six times the price of reinforcing steel, defeating the objective of prestressing; i.e., economy. The only economical solution for using high-grade wire in American construction techniques is stranded cable, an absolutely stable material, which has been tried and tested in suspension bridges and the like for the last hundred years.

These strands, as has been amply demonstrated by performance of actual jobs, show no trace of creep under the stresses used so far. It is well known that there are misgivings against single wires, as substantiated by Magnel and other authorities.

From the standpoint of a designing engineer, who stakes his reputation upon the performance of a structure, what could be safer than stranded galvanized cables at allowable stresses found adequate for decades? If, on top of this, a high safety factor against cracking is adopted, safety beyond the cracking limit is merely a theoretical concern.

In such prestressed structures, if the loading has to be increased, the strength of the structures can be improved in most cases by increasing the cable stresses. This cannot be done with bonded small wires, but is easy with cables.

To sum up, using stranded wire cables is a more logical and economical way for American practice, as the labor involved is so very much reduced and there are no unknown factors.

As to specifying as failing load a function of the dead and live load (preferably with different coefficients as the load give failure), this principle is sound, since in prestressed concrete stresses are not proportional to loads.

The German tentative code for prestressed concrete uses a factor of 1.75 times dead and live load as the failure condition.

In order not to favor any material unduly and to arrive at an equal safety factor in actual use for all materials, these coefficients require careful comparative determination, which should be done after hearing all the competing interests concerned.

L. COFF
Consulting Engineer
New York, N. Y.

Rosoff's Cape Canal work

Sir: In the obituary notice of Samuel R. Rosoff (ENR Apr. 19, p. 26), the second paragraph is not in accord with facts as concerns his connection with the Cape Cod Canal, the construction of which was under my charge as resident engineer from 1907-1912 for the Cape Cod Construction Co.

Due to difficulties of financing it was not until May 15, 1909, that a contract was signed with the Degnon Cape Cod Canal Construction Co. for the excavation and breakwater construction. Mr. Rosoff could not have learned in 1908 that there would be needed two million tons of rock, for no such estimate was ever made. The actual estimate was less than half a million.

As Mr. Rosoff told the story to me at the start of work in 1909, he was aware of available waste rock in the Penobscot Bay quarries. Learning of

IT'S BIGGER
THAN YOU THINK!

SUPER-VULCAN
OPEN TYPE
DIFFERENTIAL-ACTING
PILE HAMMERS
18C, 30C, 50C and 80C

Super-Vulcan drives piles down faster, easier, and with savings in costs. Twice the blows per minute does the job. And each blow requires 25 to 35 per cent less steam.

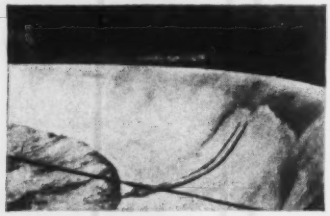
Other Super-Vulcan points to consider are rugged strength, durability, simple design, positive action. Together with easy and inexpensive operation, these Super-Vulcan features enable you to drive more piles per dollar.

For added economy, the open-type fits the same leads and uses the same accessories as the Vulcan Single-Acting hammers. Write for full details.

Sizes: 18C—30C 50C and 80C meet all needs.

VULCAN IRON WORKS
Since 1852
331 North Bell Avenue
Chicago 12 ---Illinois

WE RESTORED THIS DAM WITH "GUNITE"



These two photos show a large, circular, gravity dam belonging to a large Eastern power company, and is just one of many that we have repaired with "GUNITE" for this organization.

The Upper View shows the advanced state of disintegration existing before our Contract Department started work on the dam; lower view shows the completed job.

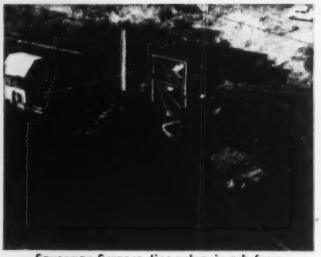
After chipping out the loose and disintegrated concrete and sandblasting the entire area, heavy reinforcing mesh was placed over the surface and two inches of "GUNITE" applied.

This, and scores of similar "GUNITE" jobs we have performed are illustrated and described in Bulletin A2400. Write today, on your letterhead, for a free copy.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.
MANUFACTURERS OF THE CEMENT GUN

More Yardage with Less Labor

Sauerman Slackline builds cofferdam across gorge on river



Sauerman Scraper digs volcanic ash from hill and loads into cars.

How Sauerman Machines Cut Costs

With one man at the controls a Sauerman Scraper or Slackline Cableway can reach out 1,000 ft. or more and dig, haul and dump sand, gravel or any bulk material. Simple operation! Economical use of power!

A Sauerman machine can be installed to reach across a pit, pond, river or stockpile, or up to the top of a hill. It moves material rapidly anywhere within its wide radius. Flexible for any ground conditions. Costs only a few cents per cubic yard handled. Gas, electric or diesel.

Write for new Sauerman Catalogs

Rope Haulage Equipment Specialists Since 1909

SAUERMAN BROS., Inc.

532 S. CLINTON ST. CHICAGO 7, ILLINOIS

the proposed work early in 1909, instead of collecting all the rock available in the market, he secured options from various quarry owners near Rockland, Maine, to buy their waste material at the cost of small down payments from a large roll of bills (his total cash at that time) which had a core of ones and various of larger denominations outside, secured by a rubber band.

Then he formed a partnership with the owner of a fleet of lumber schooners at Mystic, Conn., and under the name of the Gilbert Transportation Co., secured a sub-contract from the Degnon Construction Co. to build the breakwater. Actual construction was started on the Sandwich breakwater June 19, 1909. The stone was loaded at the quaries and transported in schooners carrying from 150 to several hundred tons which were anchored on ranges and unloaded by lighters at the deep end of the breakwater half a mile offshore.

Only 46,793 tons of stone were dumped in the core of the breakwater during that season. Work was carried on slowly and inefficiently, and as a result, the Gilbert Company failed. The Degnon company took over the following year and completed it with rock from quarries much nearer the canal.

As the total amount paid to the Degnon company on my estimate, up to the date when Rosoff and his associates ceased all connection with the canal, was about $70,000, it is hard to figure where Rosoff, a subcontractor, made a net profit of $200,000, as stated by your writer.

Possibly your writer got his data from a Saturday Evening Post article published a few years ago, based on Mr. Rosoff's recollections. Evidently time had colored Mr. Rosoff's memories. There is no doubt that he prospered and did big work in later years. He was quoted as boasting that he needed no education, for he could hire engineers cheap to do any work of design he wanted. Still, a little schooling might have prevented his belief that it was not possible to measure a ship's load by reading draft marks loaded and empty which led to his undoing when he tried to persuade me that I could not check his bills of lading.

One of the last shipments of rock received under his contract was on an old barge which my inspector's measurements showed to be about 1,000 tons. As the inspector went aboard he met the captain and asked him "How much rock have you for us, Captain?" The latter, a shrewd old down-east salt, evidently aware that there was suspicion on our part, replied, "Wa-'ll, the bill of lading

calls for 2,000 tons. If I had it aboard, I'd sink."

Some 25 years later I encountered Mr. Rosoff on my job at the New York World's Fair. His face lighted up in a beaming smile as he exclaimed, "Well, Durham, it's a long time since we met last! I nearly put one over on you on that Canal job, didn't I?" There was no rancor, only amusement at the recollection of an attempt that failed.

HENRY WELLES DURHAM
Sandwich, Mass.

Rubber in pavements

Sir: I read with interest the review in your Dec. 7 issue of the present situation with respect to the use of rubber in asphalt pavements.

As one who has engaged in basic research work concerning the design of asphalt mixtures and also with the practical use of asphalt mixtures on a large scale for new and novel applications, I find myself somewhat unsympathetic with the thought that rubber, in the final analysis, will be found to have any legitimate place in the design of asphalt paving mixtures.

I cannot help recalling some of the extensive areas of more or less uncharted knowledge concerning asphalt mixtures and their design; such as (1) the function of mineral fillers and their requisite properties or (2) the almost limitless variations in the physical properties of the cementing medium itself (i.e., the asphalt cement), obtainable under existing manufacturing methods (to say nothing of new methods of manufacture in the offing), and I cannot avoid speculating on the wide range of variation in physical properties of asphalt mixtures which is possible by taking advantage of the many grades and types of asphalt cement available and a broader understanding of the functions of mineral filler or by developing new and better fillers.

Finally, I cannot avoid concluding that the asphalt-paving technologist will be able to satisfy any reasonable demands for special physical properties for pavements (if someone will describe these desired physical properties in sound engineering terms) by availing himself of these two rather wide-ranging variants.

All in all, I should be inclined to predict that when all the smoke (perhaps promotion) clears away, it will be found that variable physical properties for asphalt mixtures for various special applications will be found readily attainable by taking advantage of the possibilities of the two basic ingredients.

WALTER C. CAREY
Tulsa, Okla.

● **High continuous net output—201 hp continuously at 1050 rpm—that's with all standard power unit accessories. And momentary overload is 272 hp at 1200 rpm. Waukesha's new Mogul Six is a full Diesel, four-cycle, solid injection. Six cylinders, 7-in. bore, 8¼-in. stroke, 1905 cu. in. displacement. Its unique patented combustion chamber cannot be had in any other American Diesel engine! That means smooth, clean, shock-free operation with high fuel economy. You can change over to natural gas, or vice versa, right in the field (there's a quick conversion kit for this). This Diesel unit has all "top drawer" mechanical features—lots of 'em—all interesting. New Bulletin 1569 tells you. Send for one.** 113

WAUKESHA MOTOR COMPANY
WAUKESHA, WISCONSIN
NEW YORK TULSA LOS ANGELES

Which method will you use to select the DRAINS?

• One way to select drains for a project is to spend days and weeks analyzing drawings, literature and other data —and you may still not be sure of your selection. The other way is to call Josam on the job, knowing that Josam has the widest range of plumbing drainage products in the world . . . and that Josam is specified and installed in more projects, than all other makes combined. In this way, you put proven experience on the job . . . you save time, you save guesswork and you know that the drains selected will be absolutely correct.

BRIDGE DRAIN
Series 030-S
37 other types

RAMP DRAIN
Series 0310-5-R
63 other types

SWIMMING POOL FITTING
Series 0710-B
78 other types

Over 350 different types of other drainage products

JOSAM MANUFACTURING CO.

Main Sales Office,
360 Josam Building,
Cleveland 13, Ohio
Manufacturing Division,
Michigan City, Indiana
Representatives in all Principal Cities

JOSAM MANUFACTURING COMPANY
360 Josam Building, Cleveland 13, Ohio
Please send me information on drains for

.....

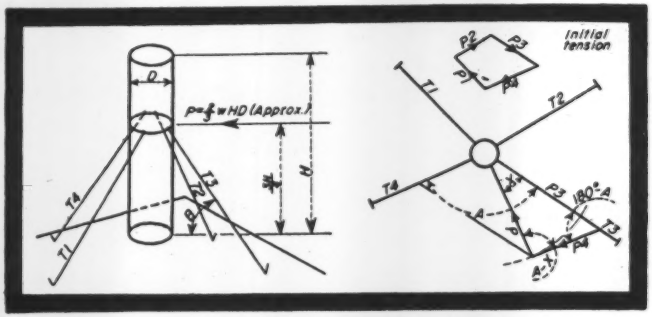
Name.....

Firm.....

Address.....

City.....Zone....State.....

FIELD AND OFFICE



Stresses in guys anchoring tall stacks

Occasionally it is necessary to locate stack guys unsymmetrically both in plan and in vertical angle. A solution for initial and maximum guy stresses in such a case can be easily obtained.

Initial guy tensions are adjusted so that the stack takes only vertical components of the guy tension. This is done by computing or assuming a desirable initial tension in each guy and computing corresponding horizonal pulls. In the illustration, a general case of four guys is used. The force polygon for the pulls is made to close by assuming one of the pulls (P_1) fixed in magnitude. The direction of all four pulls is fixed, but P_3 can be shifted until desirable values of P_2, P_3, and P_4 are obtained. Since the polygon is closed, there is no horizontal force on the stack and no moment due to the pulls.

Maximum guy stress due to wind or seismic forces must be determined for each guy separately. Maximum pull is first determined and corresponding guy tension computed. Wind direction to give a maximum pull in a guy when adjacent guys are more than 90-deg apart is determined by the formula:

$$\frac{P_3}{P} = \frac{\sin(a - x)}{\sin(180 - a)}$$

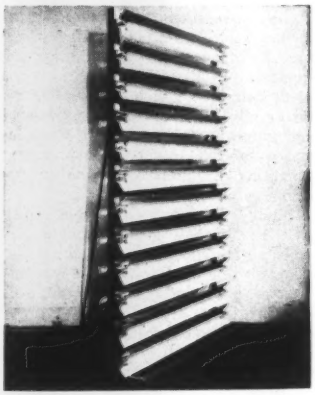
Location of P to give a maximum value for P_3 is determined by setting the first derivative equal to zero and solving for x, showing that $\tan x = -\cot a$. Assigning values to a, it is readily seen that maximum pull in one guy occurs when the wind acts at 90 deg to the other.

It is sufficient to solve for a minimum requirement of one guy acting alone with wind parallel to the guy and for maximums in guys affected by adjacent angles greater than 90 deg.

I have used a general case of a single set of four guys, but the same principles apply to an unsymmetrical arrangement of three guys or to several levels of guys on the same stack. In the illustration, using four guys fastened at three-fourths the stack height and a wind of w lb/sq ft, maximum guy tension is:

$$\text{Max } t = \text{Initial } t + \frac{2\ whd}{3 \cos b \cos x}$$

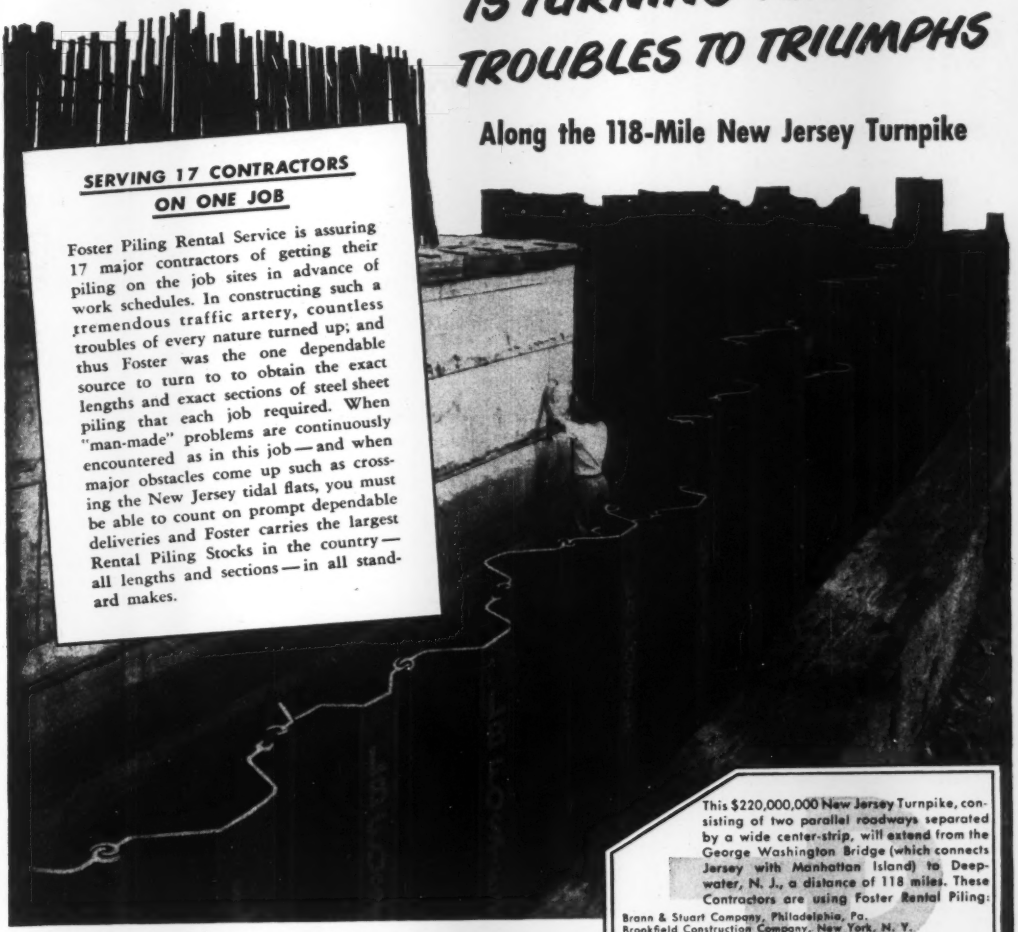
—ROBERT B. YULE, CHIEF STRUCTURAL ENGINEER, GENERAL INDUSTRIES, INC., PHILADELPHIA, PA.



INFRA-RED HEAT RAY TUBES sped the drying of plaster at the Grosvenor apartments in Seattle, Wash. A battery of 12 tubes and reflectors, mounted on a portable stand, dried a 2¼-in. solid metal lath and plaster studless partition sufficiently between 4:30 in the afternoon and 8:00 the next morning to permit painters to take over. Tubes used were manufactured by: Merco Industries, Seattle, Wash.

PILING RENTAL SERVICE FROM FOSTER IS TURNING TURNPIKE TROUBLES TO TRIUMPHS

Along the 118-Mile New Jersey Turnpike



SERVING 17 CONTRACTORS ON ONE JOB

Foster Piling Rental Service is assuring 17 major contractors of getting their piling on the job sites in advance of work schedules. In constructing such a tremendous traffic artery, countless troubles of every nature turned up; and thus Foster was the one dependable source to turn to to obtain the exact lengths and exact sections of steel sheet piling that each job required. When "man-made" problems are continuously encountered as in this job — and when major obstacles come up such as crossing the New Jersey tidal flats, you must be able to count on prompt dependable deliveries and Foster carries the largest Rental Piling Stocks in the country — all lengths and sections — in all standard makes.

This $220,000,000 New Jersey Turnpike, consisting of two parallel roadways separated by a wide center-strip, will extend from the George Washington Bridge (which connects Jersey with Manhattan Island) to Deepwater, N. J., a distance of 118 miles. These Contractors are using Foster Rental Piling:

Brann & Stuart Company, Philadelphia, Pa.
Brookfield Construction Company, New York, N. Y.
Geo. M. Brewster & Son, Inc., Bogota, N. J.
Cayuga Foundation Corporation, New York, N. Y.
Del Balso Construction Corporation, Bronx, N. Y.
Francis A. Canuso & Son, Philadelphia, Pa.
Franklin Contracting Company, Newark, N. J.
Grow Construction Company, Inc., New York, N. Y.
Jaggard Engineering Company, Westmont, N. J.
Linde-Griffith Construction Corporation, Newark, N. J.
Napp-Grecco Company, Newark, N. J.
P. T. Cox Construction Company, New York, N. Y.
Peerless Construction Company, New York, N. Y.
Raymond Concrete Pile Company, New York, N. Y.
S. J. Groves & Sons Company, Woodbridge, N. J.
Underpinning & Foundation Co., New York, N. Y.
Union Building & Construction Corp., Passiac, N. J.

With complete piling stocks in five nation-wide warehouses, plus numerous field stocks — Foster can service your every piling need with the exact lengths and exact sections of interlocking steel sheet piling—all makes and all types. You can always count on dependable delivery "FASTER FROM FOSTER" — and the low rental rates give you an added advantage in competitive bidding. Also available for immediate delivery from Foster: Rental Lightweight Corrugated Steel Sheet Piling, Pile Hammers and Pile Extractors.

Send for
FREE PILING WALL CHART EP-2

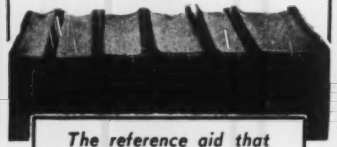
A valuable reference guide fully illustrated with tables, diagrams —pertinent facts and figures on all standard makes (all sections) of steel sheet piling, corrugated lightweight piling, pile hammers and pile extractors.

RENTAL: PILE HAMMERS & EXTRACTORS • RAILS • TRACK ACCESSORIES • PIPE

L. B. FOSTER CO.

PITTSBURGH 30, PA. • CHICAGO 4, ILL. • NEW YORK 7, N.Y. • HOUSTON 2, TEX.

Save time and money on construction jobs



The reference aid that helps you solve your toughest construction problems

With the construction work that lies ahead for every engineer, it is only up to you to assure yourself of superior workmanship—ensure your work of the finest structural qualities—by providing yourself with this revision of the famous Hool and Kinne Library—the books which for years have been providing structural engineers with the facts they need on every problem concerned with the design and construction of civil engineering structures.

HOOL AND KINNE'S

Structural Engineers' Handbook Library

Revised by **R. R. ZIPPRODT,**

And prepared by a staff of sixty-three well-known engineers, each a specialist in his field.

6 volumes; 3763 pages; 2719 illustrations; 63 contributors

Each one of these six volumes is a complete reference in itself on some aspect of structural engineering. The library

▶**COVERS** the how and why of foundation and substructure design and construction, the general theory of structural members, the detailed design of such members and the design of their connection with other members.

▶**EXPLAINS** the principles of statics, reactions, moments and shears in beams and trusses, influence lines, methods of computing stresses in lateral trusses and portal bracing.

▶**GIVES** details of design and construction of steel, timber and concrete structures of all types.

EXAMINE IT FREE!

We invite you to inspect these books for yourself, because we know that that is the one way you can realize their true value to you, and to the jobs that you do. You want to back up your own knowledge with sure, easy-to-get facts, and you want to make your workmanship worthy of your best time and effort. Therefore, the best investment you can make is to add to your own experience the tested working aids given in this dependable reference library.

Send for all six books, and allow them to go to work for you on your toughest problems.

10-DAY TRIAL EXAMINATION

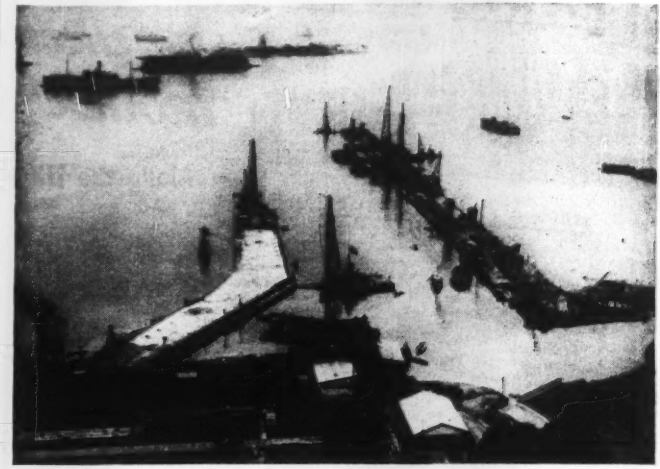
McGraw-Hill Book Co., Inc., 330 W. 42 St., N.Y. 18

Send me Hool and Kinne's STRUCTURAL ENGINEER'S HANDBOOK LIBRARY, 6 volumes for 10 days' examination on approval. If the books prove satisfactory, I will remit $4.50 in 10 days, and $6.00 monthly until $34.50 is paid. Otherwise I will return books postpaid.

(PRINT)
Name .....
Address .....
City ..... Zone ..... State .....
Company .....
Position NR-5-24

This offer applies to U. S. only.

FOREIGN



NEW WHARF FOR RIO—Due for completion late this year, is this 2,869-ft addition to the overcrowded wharf facilities of Rio de Janeiro, Brazil. Known as the Maua Pier, it is at the foot of Avenida Rio Branco, Rio's main street. Construction is by Christiani & Nielsen, who in 1949 bid $4,348,750 on the job. The pier consists of a continuous bulkhead 1,312 ft on a side and 172 ft across the end, and 49 ft wide. It is supported on reinforced concrete piles 15¾ in. x 15¾ in. by 62 ft long, driven to bedrock. Reinforced concrete sheet piling is used to form caissons which are filled with crushed rock and sand before the entire structure is capped. Space inside the barrier will be covered by two 3-story warehouses. At the left side the bay will be dredged to a depth of 42½ ft, giving ample draft for the largest liners.

Building Research Congress London, Sept. 11-20, 1951

A building research congress is to be held in London Sept. 11-20 this year, and a large attendance is expected of civil engineers, architects, builders and scientists concerned with the problems of building materials, structures, heating and ventilation, lighting and acoustics.

The congress will be centered at the Institution of Civil Engineers, and visitors will have an opportunity to see the various exhibitions in connection with the Festival of Britain. Advance copies of the papers will be circulated so that most of the time will be available for discussion.

It is expected that there will be available to visitors many interesting exhibits of the latest methods and materials of construction—both British and foreign.

Copies of a descriptive brochure are obtainable from the United Kingdom Scientific Mission, 1800 K St., N. W., Washington 6, D. C., and prospective delegates from this country should write to The Organizing Secretary, Building Research Congress, Building Research Station, Watford, Herts, England.

Foreign briefs

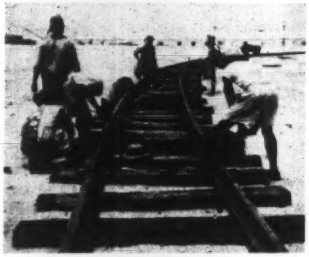
ECA's 4th year begins—The experience gained in three years of administering the Marshall Plan in Europe is now being used by the Economic Cooperation Administration in launching the new program of American technical and economic aid to the countries of Asia and the Pacific. The governments of Thailand, Indonesia, Burma and the Associated States of Indo-China have accepted the United States offer. William C. Foster, Economic Cooperation Administrator, says "In the fourth year of our operation, ECA will devote all its energies to the task of helping the free world build a strong defense program against communist aggression.

Pakistan roads—Pakistan has finalized a plan for developing a network of federal highways in West Pakistan radiating from Karachi to Quetta, Peshawar, Rawalpindi and Lahore. The plan was adopted by a recent conference of engineers in Karachi.

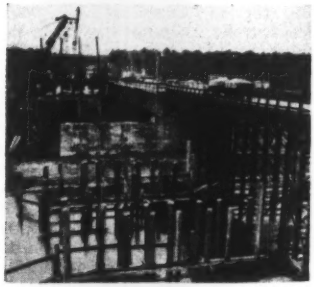
More Point 4 aid—Two U. S. Bureau of Reclamation engineers have been assigned to Northern Rhodesia under the Point 4 program of exchanging

technical information. They are C. M. Jackson, Arapahoe, Neb., construction engineer on the Frenchman-Cambridge division of the Missouri River Basin project; and Edgar E. Foster, hydraulic engineer at the Denver federal center. C. W. Burmingham, former chief of the bureau's development division at Klamath Falls, Ore., is leaving for Saudi Arabia to work on a selected area there to determine the feasibility of developing additional water supplies for new irrigation projects and the rehabilitation and expansion of existing irrigation facilities. A dozen bureau specialists will help Lebanon survey the Litani River for power and irrigation. Other countries to be helped under Point 4 are India, Pakistan, Israel and Brazil.

(Continued on next page)



LIBERIA'S FIRST RAILWAY—Native labor is "working on the railroad." This line, 45 miles long, will connect the port of Monrovia with the rich iron ore deposits in the Bomi hills. Of an estimated 1,600,000 population in 1949, only 45,000 were employed in industry. The vast majority of Liberia's population is engaged in subsistence agriculture. Liberia was started by the American Colonizing Society in 1821, and became a republic in 1847.—Eastern Pubs. photo



AUTOBAHN BRIDGE—In the background, left, huge windlasses are raising steel structures of a highway bridge which was destroyed in 1945 by the Nazis to prevent Russian troops from entering Berlin. The bridge is now being restored by the West Berlin Magistrat. In the foreground, right, is the temporary bridge erected just after the war.—Acme photo.

extra service for your equipment when

"WEAR-RESISTED"

with AIRCO hardfacing alloys

Because of the hardness and other desirable characteristics of these alloys, they provide high resistance to all types of wear — abrasion . . . impact . . . heat . . . corrosion. One application often adds 2 to 25 times longer service life to *worn or new* parts . . . big dividends in savings of "down-time" and replacements.

There is an Airco alloy available for oxyacetylene flame or electric arc application to meet all types of wear conditions.

1. *Severe abrasion and medium impact*
2. *Shattering impact and abrasion*
3. *Severe impact and abrasion*
4. *Sliding abrasion and impact*
5. *Extreme earth abrasion*
6. *Corrosion and heat*

Constant research is developing new alloys to meet special wear problems as they occur.

If you have parts or tools subject to any type of wear, it will pay you to investigate the savings you can make in maintenance and replacement costs by using Airco Hardfacing Alloys.

For further information about Airco's complete line of "wear-resistant" alloys, write your nearest Airco office or Authorized Dealer for a free copy of the Hardfacing Alloys Catalog.

AIRCO

AIR REDUCTION

AIR REDUCTION SALES COMPANY • AIR REDUCTION MAGNOLIA COMPANY
AIR REDUCTION PACIFIC COMPANY
REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL
Divisions of Air Reduction Company, Incorporated
Offices in Principal Cities

JACKSON FS-6A

FLEXIBLE-SHAFT VIBRATOR

Excellent

FOR BOTH THICK and THIN SECTIONS — ALL TYPES OF GENERAL CONSTRUCTION

COMPACT and powerful (4.7 HP engine of national reknown), built to take severe usage. Available with vibrator heads in 3 sizes and flexible shafting in 7′ and 14′ lengths up to 28′. Full-swivel, dirt-proof base. Furnished with or without wheelbarrow mounting. Frequency is instantly adjustable over a wide range. May be quickly converted to wet or dry grinding and drilling. An outstanding fine concrete vibrator for general construction work. ***For Sale or Rent at Jackson Distributors.***

ELECTRIC TAMPER & EQUIPMENT CO.

LUDINGTON, MICHIGAN

When you specify

BLAW-KNOX GRATING

you get . . .

- Rigid One-Piece Construction, easy to install.
- Maximum open area for light and air.
- Easy painting—all surfaces accessible.
- Non-slip tread due to twisted bar.
- Self-cleaning—no sharp corners to clog.

Write for complete specifications.

BLAW-KNOX Electroforged

GRATING AND STAIR TREADS

BLAW-KNOX DIVISION OF BLAW-KNOX COMPANY

2001 Farmers Bank Bldg., Pittsburgh 22, Pa.

NEW METHODS IN AN OLD LAND —A crew of young Jewish workmen use up-to-date machinery to make crushed stone for paving new roads in Israel. This is part of the great efforts now being made to build a modern state in this ancient and historic but still largely undeveloped country.

Brazilian power—The government of the state of Minas Gerais and the federal government of Brazil have signed a convention calling for the establishment of a $30,000,000 company to generate power on the upper Sao Francisco River and to distribute it throughout the center of the state. In the meantime, President Vargas has promised to replace the existing 350-mile road link between Rio de Janeiro and Belo Horizonte, capital of Minas Gerais.

Le bon plan Marshall—France and other countries in the Marshall Plan have poured the equivalent of nearly a billion dollars in counterpart funds into electric power programs, but the Economic Cooperation Administration says they will need to build many more power plants to supply the demands for rearmament.

France, which suffered severe destruction to her electric industry during the war, increased her installed capacity by 2.6 million kw since the start of the Marshall Plan. Most of the $724 million in counterpart funds released by France to boost power facilities have gone into the construction of large, modern thermal plants and hydroelectric stations, among the most important being the thermal plants at Genevilliers and Arrighi, near Paris; the thermal plants at Harnes and Dechy in the northern mining area; the hydro-generating station at Genissiat which, when completed, will be the largest in Western Europe; the Donzere-Mondragon hydro development on the Rhone River, and the huge hydroelectric project at Ottmarsheim on the Rhine. Based on present estimates, however, France still faces a deficit of between 200,000 to 300,000 kw in generating capacity at the time of peak demand which will come during the next few years.

Bombay's water supply may be in danger

M. Andre Coyne, consulting engineer to the French government, has reported to the Bombay municipality that Tansa Lake, the 40,660,000-gal capacity dam and reservoir—Bombay's water supply—when full will be in an extremely critical condition; a situation which could lead to sudden catastrophe some time.

Steps are being taken by the city authorities to engage engineers to plan the stabilization of the dam.

Tansa Lake lies 65 miles north of Bombay in the foothills of the Western Ghats, a 3000-ft. escarpment paralleling the west coast of India.

Bombay has a new dam currently under construction on the Vaitarna River a few miles from Tansa. Scheduled to be completed in about three years, its reservoir will be connected to Tansa Lake by a tunnel. A new 96-in pipeline will then convey the waters from both reservoirs to the city.

Survey Turkish hydro

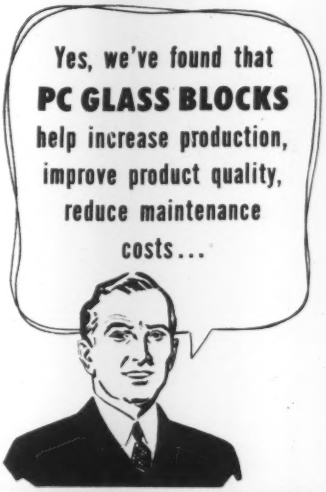
A three-man team of U. S. engineers returned recently from Turkey, after acting as consultants to the Turkish government on its plans for a large power and irrigation development on the Gediz River, in Anatolia.

Members of the consulting team were W. P. Creager, Buffalo, N. Y.; J. P. Growdon, Pittsburgh; and A. L. Alin, Omaha. The group supplemented a report on the project prepared by Knappen, Tippetts Abbett Engineering Co., New York City.

The project—for which part of the funds are expected to be supplied by a loan from the United States—will involve a 230-ft high sand and compacted fill dam, a two-mile tunnel, and a powerhouse with an installed capacity of 70,000 kw. It will also serve to control disastrous floods on the river, and to irrigate large areas of farmlands.

Canadian cities show marked growth

The larger Canadian municipalities will spend $560,000,000 on basic services to take care of natural growth in the next five years, according to David B. Mansur, president of the Canadian government's Central Mortgage and Housing Corporation. He estimated, at the Community Planning Association of Canada annual meeting at Ottawa, that average community growth in municipalities of over 5,000 would be about 16 percent during the next five years.



▶PC Glass Blocks have valuable protective and insulating features, as well as downright economy benefits. For example, they have more than twice the insulating value of ordinary, single-glazed windows. This helps to prevent heat losses, makes the air-conditioning equipment more efficient. They seldom require repairs; there's no need for periodic sash puttying and painting.

And PC *Functional* Glass Blocks, with their special surface patterns, internal prisms and fibrous glass screens, diffuse and direct the daylight they admit. Thus, they condition the natural light for critical seeing tasks, make daylight equally available for all task areas.

Let our specialists help you with your new-building or sash modernization programs. And, for complete information on the use of PC Glass Blocks in industrial, commercial and public buildings, fill in and return the coupon.

PC GLASS BLOCKS can be used to replace old, uneconomical windows, as in this Meadow Gold Products Corp. building, Brooklyn, N. Y. The entire job can be done at once, or extended over a period of time.

Pittsburgh Corning Corporation
Dept. AK-51, 307 Fourth Avenue
Pittsburgh 22, Pa.

Without obligation on my part, please send me a FREE copy of your booklet on the use of PC Glass Blocks in industrial, commercial and public buildings.

Name .....

Address .....

City ..... State .....

PITTSBURGH PC CORNING

GLASS BLOCKS

The mark of a modern building

Distributed by Pittsburgh Plate Glass Company; by W. P. Fuller & Co. on the Pacific Coast, and by Hobbs Glass Ltd. in Canada

DARAKOTE
anti-stripping additive

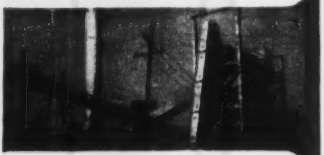
makes it possible for liquid bituminous materials to adhere to wet, moist or dry aggregates . . . prevents stripping under adverse conditions of moisture and low temperature.

DARAKOTE actually displaces water, permanently binds asphalt to the aggregate and to the road surface.

SURFACE TREATMENT
With ***DARAKOTE,*** surface treatment goes on uninterrupted, rain or shine, no matter if aggregate and old road surface are drenched, damp, or bone dry.

ROAD MIX
With ***DARAKOTE,*** less blading and mixing is required — often aerating and drying out windrows is accomplished in half the time. Demurrage and standby time is reduced.

TRAVEL PLANT MIX
DARAKOTE adds working days to your paving season. Asphalt maintenance and paving programs continue as scheduled, costly delays are eliminated.



PLANT MIX
DARAKOTE is more effective at all working temperatures. It retains its effectiveness under heat, will not settle out or deteriorate in processing, storage, or use.

Dewey and Almy
Chemical Company

Cambridge 40, Mass. Chicago 38
San Leandro, Calif. Montreal 32

MUNICIPAL

FAMOUS WEST COAST METROPOLIS—Here's how the central part of Los Angeles, Calif., looks from the air. The population of the city is now nearly 2,000,000, and it's still growing apace.

Los Angeles our fastest growing area

Sprawling Los Angeles, whose population has been keeping several pumps ahead of the census taker, now boasts 1,974,27 people—to make it the fastest-growing metropolitan area in the country. Los Angeles County jumped 48% in population between 1940 and 1950, from 2,785,643 to 4,222,886.

Unless defense restrictions hold up plans, the Los Angeles Board of Public Works expects to spend $38,635,000 during the 1951 fiscal year. Work planned includes Ocean Park and Imperial Highway improvement, $3,110,000; expansion of the Hyperion sewage treatment plant for $2,000,000; construction of a $400,000 sewage treatment plant at Terminal Island; construction of a $2,698,000 subway underpass beneath Los Angeles' International Airport, and $4,000,000 worth of streets, sewers and storm drains required in connection with state freeway projects.

Los Angeles' municipally-owned Department of Water and Power, busy planning for future needs up to 1981, spent $50,000,000 during 1950. This year, the Baldwin Hills reservoir, adding 293 million gal. of storage and improving water pressure in the southwest part of the city, will go into service. Including inlet-outlet lines, the reservoir cost $10,000,000. At the same time, power will begin to flow from the utility's $42,000,000 Owens Gorge hydroelectric project, 300 mi north of the city. Construction will also begin on a $58,000,000 steam generating plant, with an ultimate capacity of 400,000 kw. Two of the four 100,000-kw generators have already been ordered.

Industrial expansion for the Los Angeles area has jumped spectacularly since the first of the year. Total capital investment during the first two months of 1950 for new plants and expansion was $7,000,000; for the same period in 1951, total investment in plant construction was $37,000,000—or up by more than five times. During 1950, 128 new industries invested $21,771,000 in new construction and 399 industries expanded their plants at a cost of $76,000,000—for a total plant outlay in 1950 of $97,771,000.

Under construction at present are some 17 mi. of freeway and freeway structures, at a total construction cost of nearly $22,000,000. Ten miles of the Santa Ana freeway are currently under construction at a cost of $4,970,000. A contract for the largest single structure ever awarded on the freeways, $3,389,650 for a bridge, was recently let and construction will begin within 30 days.

Engineers set Oct. 1 as the opening date of 4.5 mi. of the Hollywood Freeway from the downtown section to Western Avenue. A $13,000,000,

(*Continued on page 58*)

The Only Large Capacity Oscillating Piston Meter

Rockwell employs the time-proven oscillating piston principle in Type 16 Empire meters. Users say the Empire has no equal for low flow accuracy and lasting durability. Empire Type 16 meters earn more revenue by turning dribbles into dollars. Maintenance records in many plants show that this design requires less repairs and fewer replacements.

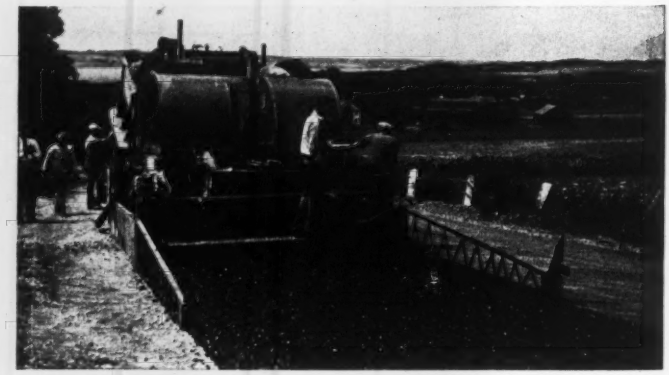
Write for catalog and price list.

Rockwell

MANUFACTURING COMPANY

PITTSBURGH 8, PA.

Atlanta · Boston · Chicago · Columbus
Houston · Kansas City · Los Angeles · New York
Pittsburgh · San Francisco · Seattle · Tulsa



No other machine or method produces comparable results at comparable costs

The Moto-Paver *mixes and lays* a high quality bituminous mat in one continuous operation, effecting substantial savings in time and labor costs. Produces a smooth, waveless surface even when resurfacing over rough, irregular pavement. Uses beach sand, gravel, crushed stone or slag aggregates and various bituminous materials including tars, cutback asphalts, road oils and emulsions. A uniform mix is assured.

Road speeds up to 25 miles per hour make it possible to move the Moto-Paver from one job to another in a minimum of time. Available in either standard or heavy duty models for handling all types of resurfacing, retread and stabilization jobs under all kinds of operating conditions.

See your local H & B distributor or write for Bulletin MP-49.

H&B ESTABLISHED 1907

HETHERINGTON & BERNER INC.
Engineers—Manufacturers
730 KENTUCKY AVENUE INDIANAPOLIS 7, IND.

DRILLING CONTRACTORS

DIAMOND AND SHOT CORE BORINGS—DRY SAMPLE BORINGS

Foundation Testing for Bridges, Dams and All Heavy Structures

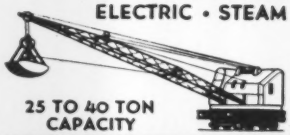
Also

Manufacturers of Diamond and Shot Core Drills, Accessories and Equipment

SPRAGUE & HENWOOD, Inc.
Scranton, Pa. Dept. E, U. S. A.

OHIO LOCOMOTIVE CRANES

GASOLINE • DIESEL
ELECTRIC • STEAM



25 TO 40 TON CAPACITY

THE OHIO LOCOMOTIVE CRANE CO
BUCYRUS, OHIO

Municipal . . .

2.5-mi. link from Grand Ave. in downtown Los Angeles west to Silver Lake Blvd. was opened earlier this year.

Los Angeles' school system has $13,949,000 worth of construction under way and has plans drawn up for another $2,000,000 to be awarded during 1951. More than $650,000 in school-building contracts have been awarded the first three months of 1951. Now under construction is $3,764,000 worth of work on elementary schools; $7,985,000 on high schools, and $2,200,000 on junior colleges. Junior colleges will get the biggest slice of the 1951 awards—about $1,500,000.

Boston transit projects held up by high costs

In 1949 a legislative act authorized the Metropolitan Transit Authority to spend $66,000,000 in new construction, but it was pointed out in the legislature that the law specifically banned starting any work until plans and cost estimates had been approved by the Massachusetts Department of Public Utilities. Thus far the commission has approved the construction of improvements only between the Park Street and Schools Square stations of the Tremont Street subway. These important betterments involve station improvements and the construction of a double-track subway route to supplement the existing double-track line which has been operating for many years between those two points, and which constitute a rush-hour bottleneck. The estimated cost is $11,500,000.

The D.P.U. must still pass on a $19,000,000 extension of the Washington Street tunnel from south of Essex and Boylston Streets to the Dudley Street station in place of the MTA's 50-year old elevated line; a subway to cost at least $12,000,000 between Dudley Street and Forest Hills in place of the existing elevated line; and a $24,000,000 dollar extension of the Washington Street tunnel from Haymarket Square to Sullivan Square, to replace an elevated line first operated in 1901. MTA officials have indicated that because of increased construction costs the last three projects cannot be undertaken within the financial limits set by the law. New legislation must be enacted before such work can start, and it is uncertain whether such legal authority will be presently forthcoming unless the present legislature runs wild in the face of present conditions.

Vancouver, B. C., to have independent city's planner

Town planning in Vancouver, B. C., is slated to come under a planning expert whose department will be independent of the city engineer and responsible directly to the city council.

Over the objections of City Engineer John Oliver, aldermen sitting as a building and town planning committee recommended the new setup and agreed to consult town planning expert Prof. Harold Spence-Sales of McGill University and other qualified authorities on the problem of organization, which is understood as likely to get under way this spring. Oliver argued that sound engineering principles could be successfully coordinated with the best in town planning schemes only if the new planning department were a sub-division of his own department.

The aldermanic decision ends a year-long battle by the Vancouver Board of Trade, Town Planning Commission, three property owners' associations and other downtown groups to get the separate town planning organization sanctioned.

City Comptroller Frank Jones, Corporation Counsel Arthur E. Lord, City Engineer Oliver and City Clerk Ronald Thompson claimed duplication of staffs, high costs and administrative and engineering difficulties would be the result.

Oliver warned: "Town planners are often too prone to overlook details. It has been my experience it is often the details that wreck the implementation of the most elaborate schemes."

Opposing interests contended institution of a town planning division under jurisdiction of the city engineer would have the effect of stifling differences before they could reach city council, "the real policy-making body."

Vancouver at present has a Town Planning Commission which rules on zoning matters and recommends on town planning matters, but does no specific planning on an engineering basis.

Waterfront park—Eight years of continuous negotiations finally have resulted in the establishment of a waterfront park of some 17½ acres in Manhattan Beach, New York City. This park is a part of the land recently transferred to the State of New York by the federal government. It will relieve crowded Coney Island as a recreation spot, but not for bathing. There will be children's playgrounds and space for a quiet resting place for those who wish to spend a few uninterrupted hours along the shore.

(*Continued on page 61*)

McCurdy Memorial Student Union
at Evansville College.
Structural steel fabricated
by International Steel Co.
Dedicated January 1951.

"Great Events Cast Their Shadow..."

Without question, our rearmament program is the greatest event happening today to influence current conditions and the world's future. It is an event with a long shadow . . . a shadow that has reached us here at International Steel, with profound effects.

Our production facilities — instead of being concentrated on steel for a nation's buildings — are, in the main, being channeled to the fabrication of products for defense and armament — products ranging from Bailey Bridges to aviation and government research structures.

But, in spite of this defense load, you can continue to depend on us doing everything we can to meet the steel requirements of our regular customers . . . until the present emergency ends.

INTERNATIONAL Steel Co.

STRUCTURAL STEEL
STEEL BUILDINGS
STEEL TRUSSES
BUILDING PRODUCTS

Everything in Fabricated Steel for Construction

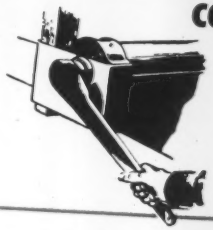
1859 EDGAR STREET, EVANSVILLE 7, INDIANA

UNLOAD IN 2 MINUTES FROM A FRUEHAUF WITH *Lumber Roll-offs!*

HERE'S an ideal Trailer for the lumber dealer, construction company or builder. Specially adapted to hauling planks, it steps up deliveries by speeding unloading time — cutting man power to a minimum. It's a perfect example of how Fruehauf builds specialized hauling equipment at "production line" prices.

If you have a hauling problem, let your local Branch man show you the Fruehauf for the job.

ROLL-OFFS MAKE ONE MAN A COMPLETE CREW!



This easily operated roller moves the whole load with speed and safety. One man operated, it speeds unloading, is locked while Trailer is under way.

★ ★ ★

HERE'S THE FIRST FRUEHAUF TRAILER, BUILT AND DELIVERED TO SIBLEY LUMBER CO. IN 1914

This Trailer was an adaptation of the stake wagon, had hard rubber tires, no Supports. A far cry from the modern Fruehauf huskies of today!

A NEW CATALOG

Here's the new Fruehauf catalog — *available free.* It covers the complete Fruehauf line, illustrated and described. Write Fruehauf Trailer Co., 10965 Harper Ave., Detroit 32, Michigan, or see your local Branch man.

FRUEHAUF Trailers

WORLD'S LARGEST BUILDERS OF TRUCK-TRAILERS

Municipal Briefs

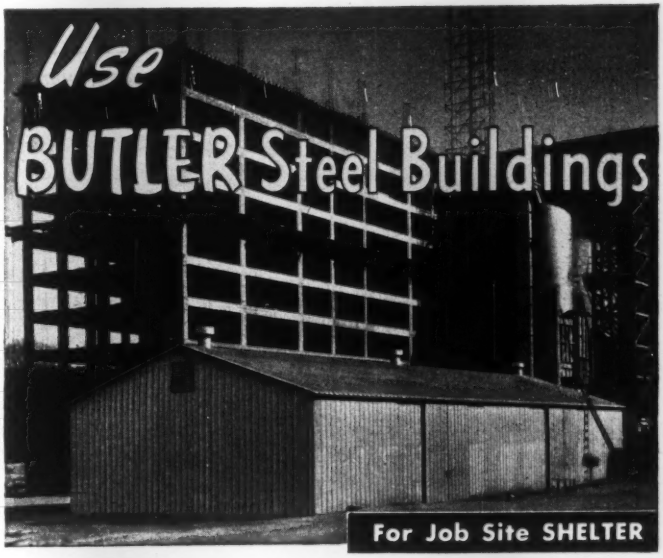
Sewer authority—The city council of Scranton, Pa., has adopted an ordinance creating a municipal authority which will have charge of the construction of all sanitary and storm sewers and the $8,000,000 sewage disposal system which under state law the city eventually will be forced to build.

Water waste survey—Mayor John B. Hynes of Boston has approved a contract with the Pitometer Co. of New York for completing a water waste survey. If the company saves the city $5,000 or more, it will get $5,000, the maximum pay accorded. Otherwise it will be paid whatever money is saved the city. During the last year, the mayor said, the company saved the city $20,000 by discovering a leakage of 1,400,000 gpd in an underground pipe in West Roxbury, and another $20,000 through detecting underregistered meters in industrial plants in the area. The latter had caused a revenue loss of 470,000 gpd.

Capital improvement plan—A new capital improvement plan for Rochester, N. Y., providing for $4,000,000 in 1955 and each year thereafter for the improvement and expansion of city-owned buildings and facilities has been laid before the City Planning Commission by City Manager Louis B. Cartwright. It offers for consideration a possible beginning of construction of a new city hall in 1955, a new police-municipal courts building and a number of projects involved in the state's arterial highway development. Other projects include construction of two incinerators in 1954, improvements to the public market at a cost of $400,000, street surfacing and reconstruction at a rate of $700,000 per year, a low-rent housing project whose financing has been completed this year and the Lake Ontario auxiliary water system to cost an estimated $5,100,000.

Outside school illumination—Since all schools are focal points of night meetings of various groups, Logansport, Ind., owning its own power plant, has decided to install modern-type street lights around every school in the city. Mayor Muehlhausen says the chief purpose is to serve the convenience and safety of the public and especially the children.

Wants engineers — Public Works Commissioner F. W. Crane of Buffalo, N. Y., believes that engineers should head every division of his department.



A 40'x100' Butler Building used by Patti Construction Company as job site shelter. Project is huge Twin Oaks apartment building installation in Kansas City.

Masonry front, display windows of Visalia, California, pump repair shop show adaptability of Butler Buildings in meeting clients' special needs.

Butler structurals and aluminum roof were combined with masonry front and sidewalls for this attractive implement dealer installation at Great Bend, Kansas.

Yes . . . Butler Buildings provide the low cost answer to your job site shelter needs and for your *permanent* quarters. Recommend Butler Buildings to your clients . . . for more profits to you. Butler Buildings are fire-safe . . . weathertight . . . and easily adapted to practically every building need. They're structurally strong, for longer life service. Ready for use in days instead of weeks. Available in a wide range of widths . . . 20′, 24′, 28′, 32′, 36′, 40′, 48′, 50′ and on up.

It will pay you to get acquainted with your local Butler distributor.

BUTLER

BUTLER MANUFACTURING COMPANY

Kansas City, Mo.
Galesburg, Ill.
Richmond, Calif.
Minneapolis, Minn.

MAIL THIS COUPON TODAY!

For Prompt Reply, Address Office nearest You:
7418 East 13th St., Kansas City 3E, Mo.
918 Sixth Ave., S.E., Minneapolis 14, Minn.
Dept. NR25, Richmond, Calif.

☐ Send information on Butler Steel Buildings for use as job site shelters.
☐ Tell me how I can profit by adapting Butler Buildings for customers' use.

Name _____
Firm _____
Address _____
City _____ Zone _____ State _____

MEN AND JOBS

DINNER MEETING—At a recent dinner meeting of the 47th Annual Convention of the American Concrete Institute in San Francisco were, left to right: Harmer E. Davis, director, Institute of Transportation and Traffic Engineering, University of California (Berkeley); Wallace Marsh, vice-president, Permanente Cement; Charles H. Purcell, director, California Department of Public Works; and Robert Glenn, associate engineer and extension representative, University of California (Berkeley).

New Appointments

HIGHWAY DEPARTMENTS

R. C. Perkins has succeeded W. E. Lefebvre as state highway engineer of Arizona.

F. N. Hveen is the new materials and research engineer of California highways.

Don G. Evans is construction engineer at Sacramento headquarters of California highways.

CORPS OF ENGINEERS

Loy W. Golden is now resident engineer, Big Delta, Alaska.

Lon Henke is now resident engineer, Kinai, Alaska.

Lt. Col. Wm. P. Jones, Jr., has been made chief of engineering div., Fort Worth, Tex. dist.

V. L. Vanzantis, acting dir., navigation unit, Cincinnati, Ohio.

Col. John R. Hardin, Great Lakes Division engineer at Chicago, and **Col. John S. Seybold,** South Pacific Division engineer at San Francisco, have been ordered to duty in the Office of the Chief of Engineers, Washington, D. C.

Donald P. Billard, transferred from Wilmington, N. C. to Atlanta, Ga. as chief of the reports section of South Atlantic Div.

Harry H. Kirchman formerly St. Paul Dist., has gone to Turkey to engage in road and airport construction for a large New York joint-venture firm.

GOVERNMENT AGENCIES

Wesley E. Gilbertson, Atlanta, Ga., executive officer of the Communicable Disease Center, is technical advisor to the U. S. delegation to the World Health Assembly at Geneva in May.

Dr. J. C. Haldeman has been appointed chief of the division of state grants, Public Health Service to administer the PHS multi-million dollar program of grants-in-aid for state, territorial and local public health services.

Army Language School, Monterey, Calif. **1st Lt. Thomas M. Simmons,** transferred from Fort Bragg, N. C.

STATE, CITY AND COUNTY

Frank Butler is now chief engineer of construction for the Boston, Mass., Housing Authority.

H. J. Curtis has been renamed city engineer of Niagara Falls, N. Y.

W. H. Campen has been hired as part time consultant engineer for Douglas County, Neb.

Charles L. Barber, of Peterson, Hoffman & Barber, Toledo, Ohio, has formed Charles L. Barber, architects and engineers, at 1217 Madison Ave., Toledo.

Retirements

Thomas E. Stanton has retired as materials and research engineer of California highways, after 39 years.

Fred H. Simpson, asst. engineer, Seattle, Wash., 29 years.

R. E. Strassburger, structural engineer and senior plans examiner, Seattle, Wash., 31 years.

Berkeley Blackman to retire Aug. 1 as chief of the reports section, So. Atlantic Div. Corps of Engineers, 25 years.

Harry R. Logie, engineering staff, Canadian Public Works Dept., St. John, N. B.

George Asbell, general superintendent Long Construction Co., Puerto Rico. has returned to Tallahassee, Fla.

Resignations

Edward M. Matz has resigned as assistant chief of construction of the Boston, Mass. Housing Authority.

W. C. Lefebvre has resigned as Arizona Highway engineer to become postmaster of Phoenix.

Ben Baxter, town engineer of West Kildonan, Man.

E. A. McElroy, engineer inspector maintenace bureau, Missouri highways, to join Westinghouse Electric Co., Kansas City, Mo.

Stoner K. McLelland, chief engineer, Oklahoma highways, after 35 years.

Business changes

Richard Hazen, former partner, Malcolm Pirnie Engineers, has opened an office for municipal and industrial water supply and treatment, sewage and waste disposal, at 110 E. 42nd St., New York 17.

W. W. Slocum & Co. industrial engineers and designers, Newark, N. J., have leased the 3rd floor of 1 Clinton Street primarily for the project design division. **A. H. Vanderzanden** has joined the company as design engineer and **J. D. Manheck** as construction supervisor.

Dan Dukes and **G. M. C. Lucas** will jointly supervise L. D. Long Construction Co. projects in Latin America. Mr. Dukes is executive superintendent on all unit housing, and Mr. Lucas on all multiple-story buildings.

John R. Tanner, John A. Langan and **Kenneth R. Brown** have been added as associates to O'Brien & Gere, consulting engineers, 204 East Jefferson St., Syracuse 2, N. Y.

(*Continued on page 67*)

Button up your Industrial Coating Problems with Flintkote's HYDRALT*

Here are coatings especially formulated to solve many of your industrial protective coating problems . . . and do it economically . . .

Flintkote Hydralt Asphalt Emulsions.

These versatile coatings, applied by spray, brush and trowel, form efficient barriers against dampness, weather, acid fumes and smoke. Use them on steel, concrete and insulation materials.

Flintkote HYDRALT Protective Coatings, for example, are a unique mineral colloid type of asphalt emulsion which creates a film reinforced within itself. They are durable. So durable, in fact, that many installations remain just as effective after *20 years.*

You'll find *many* advantages in specifying HYDRALT Protective Coatings.

HYDRALT Emulsions require no heating.
. . . Won't crack or check from cold.
. . . Are completely fire-safe and non-toxic.
. . . Won't sag or flow under heat.
. . . Are supplied in various consistencies, for every condition and application method.

Be sure and ask about our Asphalt Emulsions for your own use . . . and button up your industrial protective coating problems *for good.*

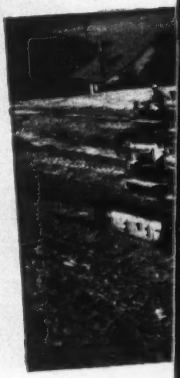
* T. M. Reg. U. S. Pat. Off.

THE FLINTKOTE COMPANY, *Industrial Products Division, 30 Rockefeller Plaza, New York 20, N. Y.*

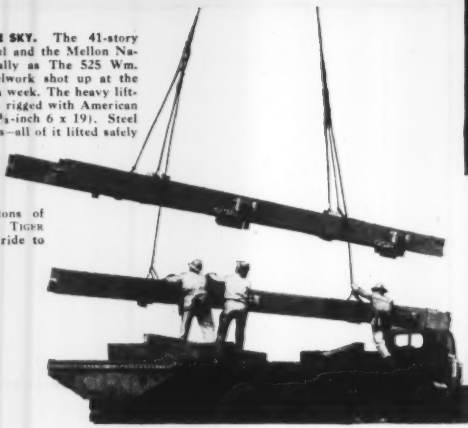
Atlanta • Boston • Chicago Heights • Detroit • Los Angeles
New Orleans • Washington
The Flintkote Company of Canada, Ltd., 30th St., Long Branch, Toronto, Canada

FLINTKOTE
Products for Industry

PITTSBURGH



A NEW GIANT SCRAPES THE SKY. The 41-story home of United States Steel and the Mellon National Bank. Known officially as The 525 Wm. Penn Place Building. Steelwork shot up at the amazing rate of two floors a week. The heavy lifting was done by two cranes rigged with American TIGER BRAND Wire Rope (⅛-inch 6 x 19). Steel loads ran from 10 to 30 tons—all of it lifted safely over a busy street.



THE TIGER SLINGS IT. 10 tons of steel held securely with TIGER BRAND Slings for a quick ride to the 32nd floor.

GETS ITS FACE LIFTED

WITH THE HELP OF TIGER BRAND WIRE ROPE

SCOOPING OUT 7000 CU. YDS. OF CLAY AND SHALE A DAY is the average set by five fast moving carryalls. They are working on the cloverleaf intersection of the Greater Pittsburgh Airport Road, the Pitt Parkway West and U. S. Highways 22 and 30. TIGER BRAND Wire Rope operates the 17 cu. yd. scoops. Contractor: Dinardo, Inc., Pittsburgh, Pa. Sub-contractor: Ruth Construction Co., Scottdale, Pa.

WANT to see a construction boom in action? Come to Pittsburgh. The old "gal" is getting a "face lifting" that will transform her into a sparkling modern city.

Five new stainless steel and aluminum skyscrapers will glitter in the golden triangle. An ultra modern airport and a new railroad station will brighten up the gateways. Express highways will carry automobile travelers quickly into and out of the city.

Construction crews are moving mountains of rock and shale, digging tunnels and building bridges to eliminate bottlenecks on the new super highways.

The famous old "Point," now an eyesore, will become the beautiful Fort Pitt Park . . . and an underground parking area will be built right in the center of the city shopping district.

TIGER BRAND WIRE ROPE DOES THE HEAVY WORK

On most of these big engineering jobs, TIGER BRAND Wire Rope is very much in evidence. Contractors in the Pittsburgh area use more TIGER BRAND than any other make.

Why? Because this tough steel rope lasts longer, moves more materials and gets the job done quicker at less cost. Write for our catalog.

CLOUDS OF GRITTY DUST put this TIGER BRAND Wire Rope on the spot. But even under these rugged operating conditions the 1¼-inch 6 x 19 rope lasts for more than two months working two shifts a day. The shovel operator says that no other rope gives as good service as TIGER BRAND. Contractor: Adam Eidemiller on Pitt Parkway East.

DIGGING OUT A BURNING MINE at the intersection of the Pitt Parkway East and the Wm. Penn and Lincoln Highways. 80,000 cu. yds. were removed from this one cut by a shovel equipped with TIGER BRAND Wire Rope. Contractor: Adam Eidemiller, Greensburg, Pa.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO • COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS TRADE MARK

AMERICAN TIGER BRAND WIRE ROPE

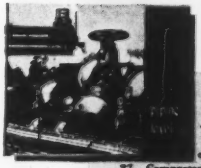
Excellay Preformed

UNITED STATES STEEL

ANOTHER NOTABLE ACHIEVEMENT IN SERVICE LITERATURE BY JENKINS

THE NEW
BOOK No. 2
Nos. 26—50

practical piping layouts



The second series of twenty-five basic Piping Layouts (published by Jenkins Bros. in leading industrial, professional, and engineering publications) is now available in booklet form.

If you are among the hundreds of valve-users who received a copy of the first book, or if you saved any of the fifty Jenkins Piping Layouts as they appeared, then you know how helpful this information can be in planning any valve installations.

This new book brings you not only 25 practical piping layouts, arranged in convenient form for quick reference. It also includes a section on the fundamentals of valve design and application to help you select the type of valves best suited for the service.

Use it as a guide to proper valve selection and placement for longest service life and lowest operating costs. Use it also for an introduction to the wide range of Jenkins Valves for every industrial engineering and plumbing-heating service. You can obtain a copy by requesting it on your business letterhead. Address:

Dept. E, Jenkins Bros., 100 Park Ave., New York 17, N. Y.

CONTENTS

AL PIPING LAYOUT Page
Sprinkler System connections 2
27. Compressed Air System for Soot Blowing 3
28. Bulk Storage Station Pump House Connections 4
29. Storage Tank Filling System for Bulk Oil Distribution Station 5
30. Combination Wet Pipe and Dry Pipe Sprinkler System 6
31. Commercial Laundry Washer Piping 7
32. High Pressure Steam Connections to Laundry Equipment 8
33. Up-Feed Vacuum Pump Heating System 9
34. Steam and Water Piping for a Dye Plant 10
35. Two Pipe Exhaust Steam Heating System 11
36. High Pressure Condensate Flash Tank Connections 12
37. Single Effect Evaporator Using a Barometric Condenser 13
38. Standpipe System with Single Roof Tank for Fire Line and Domestic Water Supply 14
39. Hot Water Circulation Loop 15
40. Boiler Economizer Piping 16
41. Evaporative Cooler 17
42. Oil Burner Piping for Light Oils 18
43. Cooling Tower Water System for Multiple Story Buildings 19
44. Continuous Boiler Blowdown System 20
45. Direct Admission System for Chemical Treatment of Fluids 21
46. Closed Feedwater Heater System 22
47. Localized Hot Water Supply Using Steam-Cold Water Mixers 23
48. Central Pumping Station for Transfer of Fluids 24
49. Fire Fighting Solution System 25
50. Closed Expansion Tank Piping Connections 26
FUNDAMENTALS OF DESIGNS AND APPLICATIONS 27
Which Valve Where? — Functional Chart of Valve Applications 28
Gate Valves 29
Globe and Angle Valves 30
Jenkins Fig. 106-A Bronze Globe Series 30
Rapid-Action Globe Valves 31
Y or Blow-off Valves 31
Correct Disc Selection 31
Check Valves 32
By-Passes on Jenkins Iron Body and Steel Valves 32

Copyright, 1951 by Jenkins Bros.

JENKINS VALVES
GOOD FOR THE DIAMOND MARK
SINCE 1864 TRADE JENKINS MARK

Jenkins Bros.

Sold through leading industrial distributors everywhere

THIS SECTION DOUBLES ITS VALUE TO YOU!

Tells "Which valve where, and why"—with information in chart form for quick reference. A compact manual that will be prized by everyone, beginner and veteran alike, who plans piping.

Nevada's Highway engineer and his assistant traded jobs recently. The switch places Huston D. Mills, right, in the top spot while W. T. Holcomb will become his assistant. The situation is entirely a political one. Mills started his engineering career in 1910 with the Southern Pacific Railroad. In 1917 he went with the Alaska Engineering Commission. He was with the Corps of Engineers till 1919 when he returned to his railroad construction work in Alaska. He joined the Nevada Highway Department in 1922 and successively was right-of-way, field, and office engineer. Holcomb joined the department in 1920 and has been state highway engineer for the last four years.

After 38 years with the Corps of Engineers, mostly with the Washington district office, Philip O. Macqueen, waterworks engineer, has retired. His service was with Washington Aqueduct. He received his C.E. degree from Lehigh University in 1907. He was at the Panama Canal on water supply projects from 1908 to 1918. After World War I, he was employed for several years by Frazier, Ellms & Sheal, consulting waterworks engineers of Cleveland. in 1923 he returned to Washington as assistant engineer for the design and construction of the new Dalecarlia Filtration Plant. Since 1936, he has been chief of the engineering branch of the Water Supply Division, supervising the designs for the present large expansion program.

The Perfect Tribute to

JOBS WELL DONE

Activities of our Industrial and Building Construction Division during the past 12 months show the greatest period of expansion in M-C & S history.

Confidence in the high standards of speed and economy of our work is clearly reflected by our record with the chemical and process industries, a type of construction so essential to the nation's welfare in this period of preparedness.

In this field alone, M-C & S has performed 48 separate construction projects within the past 4 years. *And all 48 of these chemical and process industry contracts were for clients previously served by M-C & S.*

This record of repeat contracts has been built largely on our ability to handle every phase of a construction project from excavation to installation of equipment..."turnkey jobs"—completed, delivered on schedule—ready for immediate operation.

MERRITT-CHAPMAN & SCOTT
CORPORATION

FOUNDED IN 1860...NOW IN OUR 91ST YEAR

GENERAL OFFICES:
17 BATTERY PLACE, NEW YORK 4, N. Y.

CLEVELAND • BOSTON • NEW LONDON

"Nothing like PURE, COLD DRINKING WATER on the job!"

Think of the man-hours you save by bringing water *to* the men, instead of making them stop work and go after it! They like it this way, too! Workmen have long recognized clean, safe Dixie Cups and Vortex Cups as an important health-protection measure!

DIXIE PORTABLE WATER CARRIER

Built to take it. Insulated to keep the cold in...lined with stainless steel to keep the water clean. Comes with carrying straps for jobs where men are spread out. Uses either...

DIXIE CUPS or VORTEX CUPS

"DIXIE" AND "VORTEX" ARE REGISTERED TRADE MARKS OF THE DIXIE CUP COMPANY

Free folder—write today!

DIXIE CUP COMPANY

EASTON, PA.

EDUCATION, RESEARCH

Engineering Foundation reports on 3 projects

Three of the five current projects in the field of civil engineering being conducted by the Engineering Foundation, joint research organization of the four major engineering societies, are well-established and well-financed councils which support research at six universities.

Each of these report good progress in the last year. Recent work by the Column Research Council has provided much new and valuable information on the buckling of columns, beams, and channels—information that should eventually improve the design of compression members in buildings, bridges, and other structures.

Work reported by the Council on Reinforced Concrete included bending and axial-loading tests, shear and diagonal tests, and tests on large stepped columns. These tests and others under way should aid the council in attaining the development of a workable theory and the formulation of a new code for the design of reinforced-concrete structures based on experimental data, to replace the empirical methods that have been used for many years.

The research Council on Riveted and Bolted Structural Joints has been in existence only four years, but already the results of its work, particularly on the advantages of high-strength bolts instead of rivets in building construction, are becoming evident. As W. C. Stewart, Chairman of the Council, pointed out in his report, "In the usual construction of a large office or apartment building or hotel, the structural sections are bolted together temporarily and as the riveting progresses the bolts are replaced by rivets.

Thus we have the expense of putting the bolt in, taking it out, and replacing it with a rivet. Money can be saved if the original bolt can be left in place, and studies by the Council indicate that this is a safe procedure if high-tensile bolts are used and if the bolt is properly tightened." Mr. Stewart said that bolts may also be used to replace rivets in existing structures to prolong their useful life, and that the fatigue strength of a bolted joint is at least as good as, and in some cases better than, the fatigue strength of a riveted joint. Finally, "with bolted structures there need be no noise nor other physical side effects which may be a public hazard or nuisance in some locations."

Mississippi road agency trains own mappers

A four-week intensive course in aerial photo interpretation believed to be the first designed for in-service highway was completely recently by 20 engineers of the Mississippi State Highway Department in Jackson.

Conducted by I. W. Brown, state manager of the Traffic and Planning Division, the course involved 200 hours of classroom work.

Principal reason for holding the course was the fact that most of the department's trained photogrammetrists had taken other jobs. Cost-saving benefits of photo-surveying made it essential that the department continue to use photogrammetric methods.

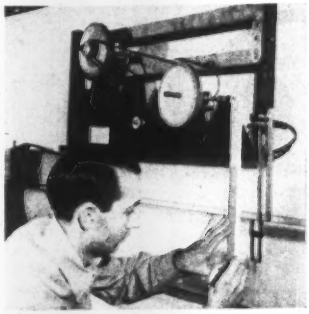
Short courses offered

University of Louisville, Ky.—Principles of the slide rule, course given by Harry Smith of Speed Scientific School faculty.

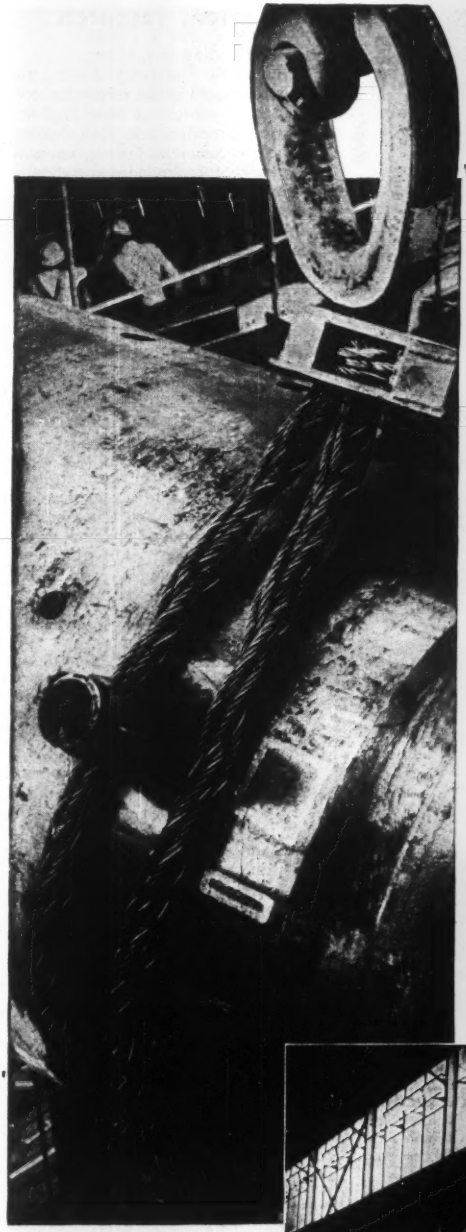
Oklahoma A & M—Oklahoma State Highway Dept. held an employe training school at the college of engineering, subjects—concrete inspection, asphalt, soils, maintenance.

University of Colorado—A class in small home construction was taught by J. C. O'Flaherty, chief structural engineer of the Denver building department, subjects: fundamental problems, building codes, zoning, building department, plumbing, heating, ven-

(*Continued on page 70*)



SALINITY METER determines the intrusion of salt water into a channel of swiftly-flowing fresh water. The vertical arm of the instrument automatically raises and lowers two circular, copper-wire electrodes over the entire vertical extent of the water in the glass-walled channel at a constant uniform rate. Continuous, rapid determinations of salinities at all levels are recorded by an oscillograph. (ENR May 3, page 74)



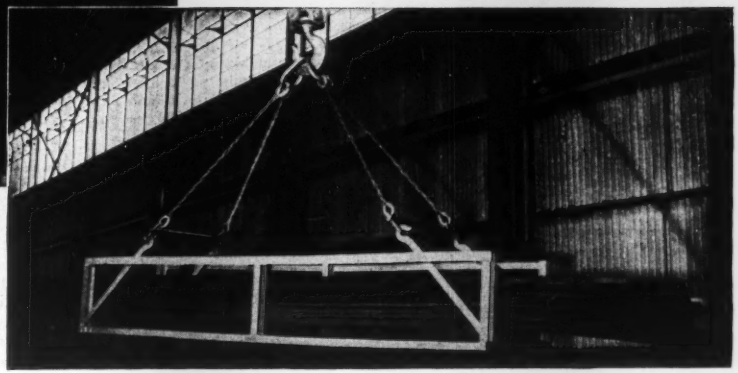
Here's the grip for the trip

Do your lifts consist of occasional difficult loads . . . or do you require a steady series of pickups engaging a minimum crew? In either case, flexible Yellow Strand *Braided* Safety Slings* will provide the right grip for the trip. And you'll be set to cut handling time, and to lower costs, as compared with the use of bulkier slings.

Patented *braiding* increases the pliability of stout Yellow Strand Wire Rope. A choker or basket hitch conforms readily to odd shapes, provides more security for unbalanced or slippery loads. Direct connections—via hook, thimble, shackle, socket or special fitting—are easily attached, owing to the relatively light weight and high kink-resistance of Yellow Strand *Braided* Slings. Send details of your application now for a recommendation by B & B engineers.

Broderick & Bascom Rope Co., St. Louis 15, Mo.
Branches: New York, Chicago, Houston, Los Angeles, San Francisco, Portland, Seattle *Factories:* St. Louis, Peoria, Houston, Seattle

BRODERICK & BASCOM
Yellow Strand
BRAIDED SAFETY SLINGS



*PATENTS: U. S., 1479889, 1824671, 2142841, 2142842, 2299269; CANADIAN, 252874, 289068

Give Him a Power Saw He'll Like

Here's a fast, heavy-duty saw designed especially for the kind of hard use customary on heavy building construction. Its easy cutting action through heavy lumber makes a hit with operators every time. The famous Stanley nameplate is recognized and respected the world over.

The Stanley W9 Safety Saw cuts through the toughest wood in any thickness up to $3\frac{1}{4}$". Heavy-duty gears in large grease chamber assure continuous, smooth operation in any position. Precision ball bearings throughout. Simple, secure adjustments for depth-of-cut and beveling angles from 90° to 45°. Telescopic safety guard protects operator from cutting edge of blade. Supplied with sturdy metal carrying case and ripping gauge.

See the W9 Saw at your tool distributor's or write for detailed literature on the W9 or other Stanley Saws, to Stanley Electric Tools, 438 Myrtle St., New Britain, Conn.

STANLEY

Reg. U.S. Pat. Off.

HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL

Education, research

tilation, lighting and wiring.

Ohio State University—Among the topics discussed at the recent highway engineering conference were: Highway finances, turnpikes, bridges, hydrology, design, construction, testing, research, maintenance, traffic, administration.

Penn State—The annual water works school will be held June 18-22, and the sewage works school June 25-29. Schools conducted by the department of civil engineering under direction of R. R. Kountz, associate professor of sanitary engineering.

English for engineers

"The Engineer as a Writer" was the theme of a recent panel discussion before the students of the evening division of the N. Y. University college of engineering. J. J. O'Connor, assistant editor of "Power" recommended the use of short words, sentences and paragraphs. He said that foremost in the editor's mind in judging manuscript for technical publications are such factors as interest for readers, factual soundness, logical presentation, and suitable illustrations.

Brief news of education and research

Summer study—Case Institute of Technology, Cleveland, offers a program of summer classes for high school students who lack certain credits to start engineering courses.

Chinese woman engineer—The college of engineering, University of Iowa, has one woman student this year. She is Mrs. Tien-To Sino, who came from China two years ago and is taking graduate work in hydraulics. Her husband also is a graduate student in the same subject.

Traffic engineering—Yale University's Bureau of Highway Traffic is taking applications for 11 graduate fellowships in that subject. Forms and more information from Director, Bureau of Highway Traffic, Strathcona Hall, Yale University, New Haven 11, Conn.

Highway engineers wanted—The Illinois State Highway Division needs about 90 more civil engineers. Governor Stevenson has asked the deans of the four engineering colleges in the state for suggestions as to how they may be obtained.

"Cities and Towns of Illinois" is the title of a new book by Karl L. Lohmann, professor of city and regional planning, University of Illinois.

MEETINGS

The newly organized Southern California Chapter of the American Public Works Association has elected as president William M. Henderson. Other officers: Harry S. Swearingen, first vice-president; Milton H. Irvine, second vice-president; Frank E. Randall, secretary-treasurer. Executive committee: Verne A. Parker, Stanley M. Lanham, and J. R. Lester Boyle. State chairman is Milton Offner at Room 153, City Hall, Los Angeles, Calif.

George Jacoby is president of the Montana Ready Mixed Concrete Association, succeeding Floyd Pappin of Great Falls. Other officers: Adolph Bromgard of Billings, vice-president; Gene Fehlig of Helena, secretary-treasurer, and Oscar Peterson of Butte, C. B. Nicely of Anaconda, Bromgard, Fehlig and Pappin, directors.

J. A. H. Henderson of Montreal has been elected president of the Dominion Council of Professional Engineers for 1951.

Harold W. Chutter has been re-elected president of the Western Concrete Pipe Association and Fred N. Linn of Modesto, Calif., vice-president, William S. Rogers of Madera secretary and treasurer. Directors for three years: Linn, O. H. Price, Healdsburg; F. Mangine, Visalia, and Frank Souther, Sunnyside, Wash.

New officers of the Illinois section of the American Water Works Association are: E. E. Alt, Chicago Bridge and Iron Co., chairman. Other officers, Oscar Gullans, Chicago, vice-chairman; H. E. Hudson, Jr., Urbana, senior trustee; C. W. Klassen, Springfield, junior trustee and Fred Gordon, Chicago, director. J. Leslie Hart was reelected secretary-treasurer.

Frank A. McCaughan is the new president of the Dallas, Tex., branch of the ASCE; R. V. Pully, vice-president; F. C. Schroeder, secretary-treasurer. H. E. Drumwright and D. A. Nettleton, director.

J. A. H. Henderson, of Montreal, has been elected president of the Dominion Council of Professional Engineers.

Edward Larson, Cincinnati, is the new president of the Ohio Society of Professional Engineers. Other officers: Charles P. Smith, Columbus, Raymond A. Freese, Cleveland, and Ronald A. Gordon, Wilmington, vice-presidents; A. J. Moon, Upper Sandusky, secretary; and Burt F. Wyandt, Lima, treasurer.

Northwest Ohio division of the American Water Works Association has elected F. H. Donaldson, Tiffin, president; Robert E. Shoup, Van Wert, vice-president; and Pierce Bailey, Toledo, secretary.

Indiana State Street Commissioners Association has elected L. D. Crum, New Castle, president; Glen Marlin, Bloomington, Frank Rose, Crawfordsville, Ray Childs, Franklin, and Gerhard J. Wyss, Fort Wayne, vice-presidents; Jack Hartshorn, Marion, treasurer; and I. V. Pencen, Peru, secretary.

Indiana City Engineers Association has elected: Gordon L. Watson, Wabash, president; E. D. Canatsey, Martinsville, vice-president; and Raymond S. Andrysiak, South Bend, secretary-treasurer.

Indiana Highway Materials and Equipment Association has elected Bruce Short, Indianapolis, president; Robert Wilson, Indianapolis, vice-president; Tom Goby, Bloomington, secretary; and E. E. Flesch, Indianapolis, treasurer.

Carl T. Mitnick has been elected president of the N. J. Home Builders Association. Other officers: Arthur Turner first vice-president; Carl S. Carlson, treasurer; Charles A. Ginnetti secretary; John S. Wright, executive vice-president; and Harry E. Smith executive secretary.

CALENDAR

New England and New York Sewage Works Associations, spring meeting, Hotel Kimball, Springfield, Mass., June 7-8.

President's Highway Safety Conference, Washington, D. C., week of June 10.

American Society of Civil Engineers, summer convention, Brown Hotel, Louisville, Ky., June 13-15.

National Society of Professional Engineers, annual meeting, Nicollet Hotel, Minneapolis, Minn., June 13-16.

National Society of Professional Engineers, annual convention, Nicollet Hotel, Minneapolis, Minn., June 14.

American Congress on Surveying and Mapping, annual meeting, Hotel Shoreham, Washington, D. C., June 18-20.

American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City, N. J., June 18-22.

Ohio Sewage and Industrial Wastes Treatment Conference, Neil House, Columbus, Ohio, June 20-22.

Western Association of State Highway Officials, Fairmont Hotel, San Francisco, Calif., June 25-28.

BETTER CURING AT LOWER COST with SISALKRAFT CURING BLANKETS

BEST WAY TO BETTER PROFITS

The SISALKRAFT Method of curing concrete roads is fast, requires fewer men, no equipment, and you're sure of:

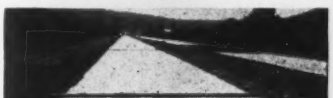
✓ Lowest possible final curing costs and best curing results.

✓ Fifteen or more re-uses of curing-blankets . . . just roll 'em up and use them again!

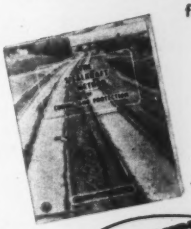
✓ The only waterproof, reinforced blankets designed to withstand rugged road-job handling.

Designed, Developed and Proved in Performance by Roadbuilders, for over 20 years

Photo above shows stringer sheets along edges of concrete, before laying SISALKRAFT *Curing Blankets (doubles life of blanket, simplifies covering and removing blankets, saves labor, improves results). Photo below: Pennsylvania Turnpike...* SISALKRAFT *used 100% for curing.*



WRITE TODAY to DEPARTMENT EN5 for this valuable 26-page book . . . no charge



Member of American Roadbuilders' Association

SISALKRAFT WATERPROOF SISAL-REINFORCED PROTECTIVE PAPERS

THE SISALKRAFT CO.

205 West Wacker Drive, Chicago 6, Illinois
New York 17, N. Y. • San Francisco 5, Calif.

The BLAW-KNOX

"Complete Package"

CONCRETE PAVING SYSTEM

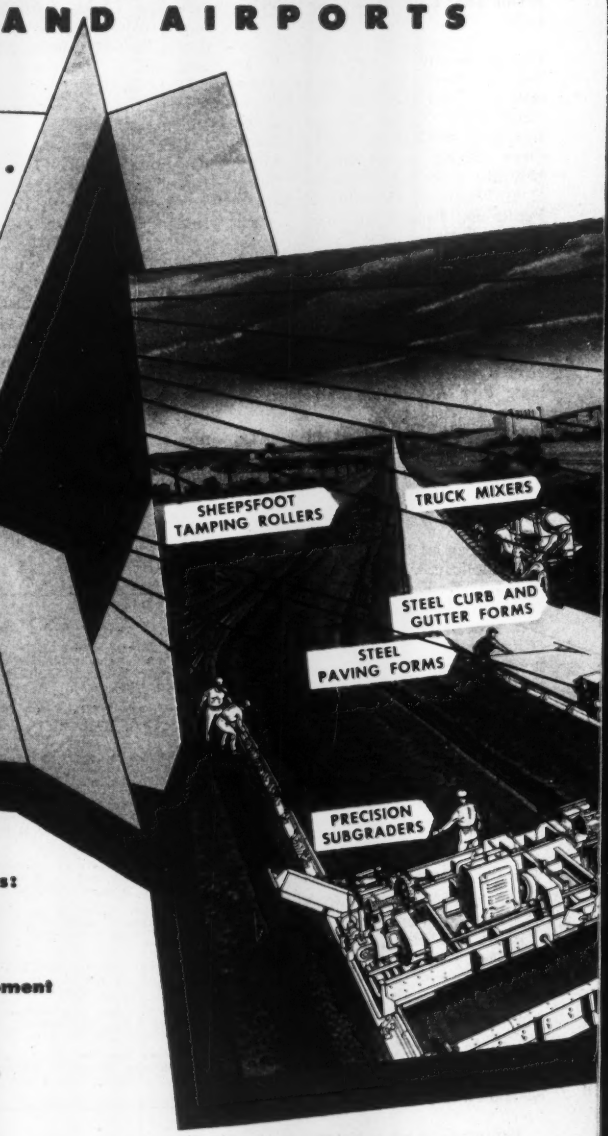
FOR ROADS AND AIRPORTS

FROM FORMS...
TO PAVER...
TO FINISHER

All in one package from

BLAW-KNOX

BLAW-KNOX



The "Complete Paving Package" also includes:

- Adnun Black Top Pavers
- Concrete Buckets

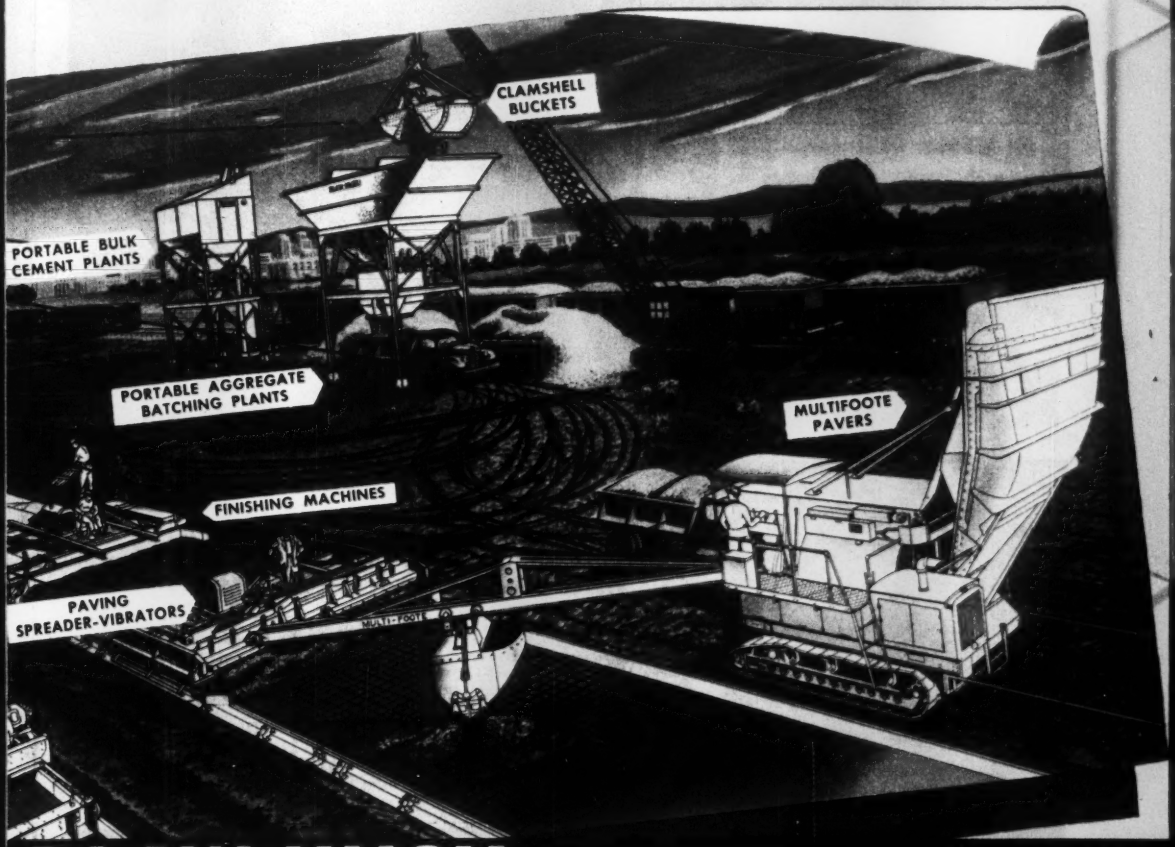
The "Complete Package" of Ready-Mix Equipment

- Aggregate Batching Plants
- Bulk Cement Plants
- New, *lightweight*, heavy-duty Hi-Boy Trukmixers
- Truck Mixer Loading Plants
- Central Mixing Plants
- Clamshell Buckets

One source for equipment is more practical . . . more profitable

LIKE so many other contractors, you'll find it much more practical and profitable to make full use of all the advantages of the Blaw-Knox "Complete Package" Concrete Paving System. This "Complete Package" contains every piece of paving equipment you need . . . from forms to paver to finisher. It's a balanced fleet of integrated construction units designed to work smoothly together and assure the steady, high-speed production which means greater daily output at the lowest possible cost. It puts your jobs on a 100% mechanized basis, with the coordinated assembly-line production that keeps the job humming and the profit rolling in.

IN addition, you have all the benefits of one dependable source of supply. You get all your equipment on one order, in one shipment, backed by one undivided responsibility, and with one financial contact. You have a prompt solution to your parts and service problems through a nation-wide distributor organization . . . one Blaw-Knox trained man can service most of your equipment. The Blaw-Knox "Complete Package" Concrete Paving System brings you more profitable operation and fewer headaches on every job. Your Blaw-Knox—Foote distributor will gladly give you the whole "package" story . . . see him before you plan your next job.

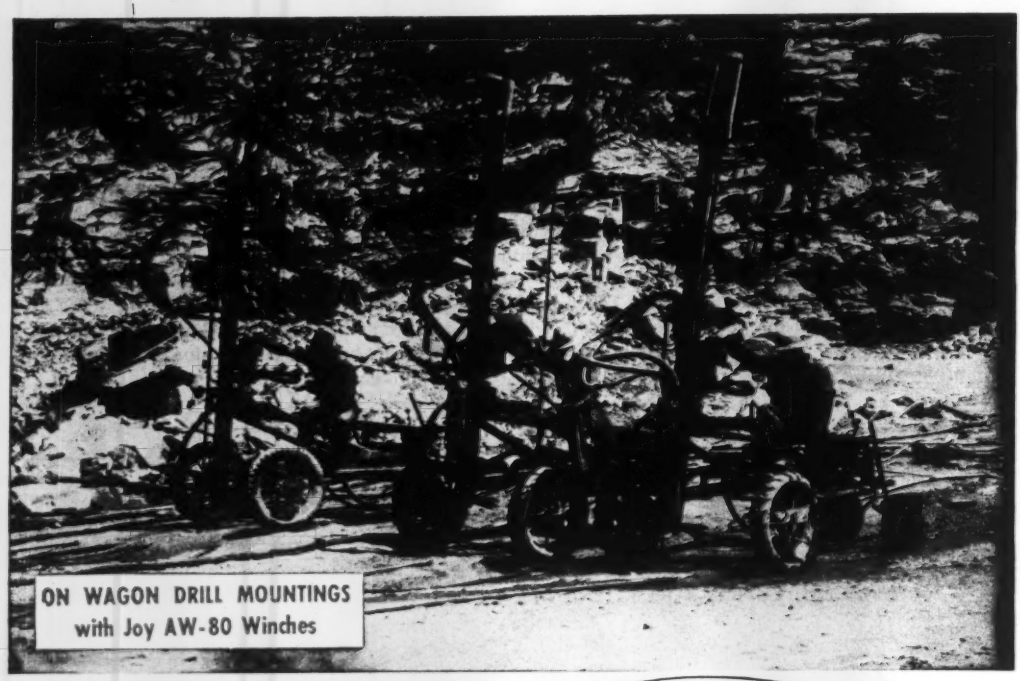


BLAW-KNOX ★ FOOTE CO.

BLAW-KNOX DIVISION of Blaw-Knox Company,
Farmers Bank Building,
Pittsburgh 22, Pa.

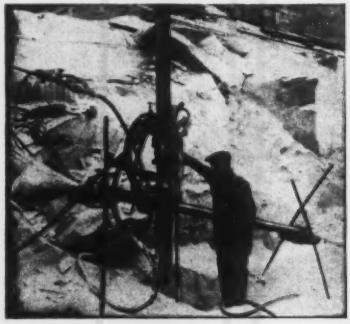
The Foote Co., Inc.
Subsidiary of Blaw-Knox Co.,
Nunda, N. Y.

Branch Offices in: New York · Chicago · Philadelphia · Birmingham · Washington · San Francisco · Distributors in Principal Cities



ON WAGON DRILL MOUNTINGS
with Joy AW-80 Winches

Put JOY SILVER STREAK DRIFTERS TO WORK ON YOUR JOB—



ON QUARRY-BAR MOUNTING

Watch daily footage *INCREASE* and costs per foot go *DOWN*!

JOY Silver Streak Drifters feature the exclusive *Dual Valve* with positive cushion control. It gives a harder, more powerful punch—literally makes air do more work. What's more, JOY Drifters *last longer*—give you more feet of hole with less maintenance. Exclusive *cadmium plating*, inside and out, inhibits rust, prevents scoring during run-in, and at the same time, adds power by permitting closer piston tolerances. ● Ask for a trial demonstration on JOY Drifters—the T-300, T-350 or T-400—*prove their all-around superiority right on the job!*

Write for Bulletin, or

Consult a Joy Engineer

W&D R 2818

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

OBITUARY

Hiram Neil Grichto, 62, superintendent of the Cape Cod Canal and a civilian chief engineer with the Army Engineer Corps, died April 21 in Buzzards Bay, Mass. He had been in charge of building and improvements on the canal in the 1930's, and he directed Army construction and fortification projects along the eastern seaboard. He was graduated from Massachusetts Institute of Technology in 1910. He directed construction of the Wilson Dam powerhouse, Florence, Ala., Veterans Memorial Bridge, Rochester, N. Y. and the C & D Bridge at Chesapeak City, Md. and the Cape Cod Canal bridges. He later supervised flood control work at New Orleans.

John J. Baker, 71, civil engineer, died at Framingham, Mass., March 13. He attended Rensselaer Polytechnic Institute, and had been connected with the Northern New York Utilities, Aluminum Company of America, and the New England Power Co.

Roy S. Braden, 62, former city manager of Raleigh, N. C., and High Point, N. C., died May 1 at Richland, Wash., where he had been connected with the Atomic Energy Commission. He obtained his engineering degree from Pennsylvania State College. Before going to High Point he was city manager at Hopewell, Va., county manager of Arlington County, Va., and city and community manager of Greenbelt, Md.

Fabian S. Miller, 57, city engineer of Palo Alto, Calif., died May 2. He began his engineering career on the Alaskan Railroad. He also worked as an engineer for the Oregon State Highway Commission and the Coos Bay Lumber Co. before joining the Palo Alto City Engineering Department in 1925. In July, 1950, with a change in the form of the city's government, he took over the newly created office of chief engineer of the utilities, whose operations he had directed as city engineer.

Blair Ross, 62, former national parks superintendent and retired U. S. engineer, died at Jackson, Tenn., April 30. He was a C E graduate of the University of Missouri. Until retirement in 1950, he was superintendent of the Great Smoky Mountain National Park.

Walter H. Flood, 65, consulting paving technologist, died April 25 in Chicago. He had his own firm for more than 35 years and had done much highway work for the state, city and Chicago Park District.

Wm. F. Spengler, 94, of Newark, N. J., who had been a building contractor for more than half a century died at Point Pleasant, N. J., April 29.

Brig. Gen. George B. Pillsbury (retired), 75, died May 8 in Ross, Calif. A veteran of 41 years with the U. S. Army Engineers, he had been in charge of constructing fortifications at Forts Miley and Baker in San Francisco. As a member of the bridge commission, he helped to win military approval for the building of San Francisco's Bay Bridge.

Karekin D. Avedisian, 57, of Elmhurst, Ill., who helped build many bridges and highways during his 27 years as a civil engineer for the state of Illinois, died May 6. He was graduated from Purdue University.

Edward A. Willis, 49, assistant chief of the Soils Section, Bureau of Public Roads, died May 10. He came to the bureau in 1922 from Minnesota. Later, he took leave to complete his education at Iowa State College, graduating in 1928. Joining the bureau at almost the beginning of its work on soils studies, Willis took a prominent part in the development of soils science as applied to highways. He helped develop the soil classifications commonly used in highway work. During his career, he had assignments to make soil studies in Panama for the transisthmian Highway and in Bolivia for a highway system there.

Leonard L. Crenan, a retired engineer for the New York State Highway Department, died May 10 in Syracuse. He retired after some 30 odd years service. He was a graduate of Syracuse University.

Layton R. Harms, 47, manager of the building specialties department of the Worden-Allen Co. of Milwaukee, died May 10, 1951. He was a civil engineer graduate of the University of Wisconsin.

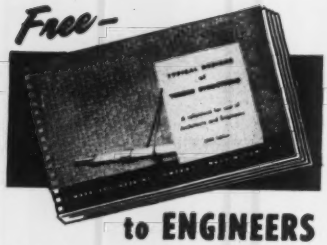
P. Gordon Cooper, 74, consulting engineer and retired federal employee, died May 4 in Washington, D. C. He was a veteran of the Spanish-American War.

Melvin Alfred Erickson, 46, engineer in charge of a large sewer project at Salem, Ore., died May 5 at Portland, Ore.

GUNITE
PNEUMATICALLY PLACED CONCRETE
DENSE · DURABLE · HIGH STRENGTH
for
Restoring Disintegrated Concrete
Dam, Dock and Bridge Repairs
Steel Encasement and Fireproofing
Sewer, Water Pipe and Penstock Linings
Stack and Bunker Linings
Wood Pile Casings—Pressure Grouting
Prestressed Tanks and Silos
Get in touch with us for engineering data and estimates
GUNITE CONSTRUCTION CORPORATION
420 LEXINGTON AVE., NEW YORK 17, N.Y.
MURRAY HILL 3-7699

STEEL
SHEET PILING
will roll to size and specifications
AMERLUX
STEEL PRODUCTS CORP.
100 PARK AVENUE
NEW YORK 17, N. Y.
DIRECT MILL OFFICE
OF THE
ARBED
STEEL MILLS IN LUXEMBOURG

"UNTOLD Savings IN money"
By the use of
ATLAS
SPEED
FORMS
"We have been able to effect substantial savings in the time . . . to set up . . . and . . . tear down, which means untold savings in money."
HOWARD C. GRUBB,
Building Contractor
Tulsa, Oklahoma
IRVINGTON FORM & TANK CORP.
Irvington 37, N. Y.
Send more information. I am interested in forms for
Name
Firm
Address



Free—

to ENGINEERS

FOR CIVILIAN
AND DEFENSE CONSTRUCTION

"Typical Designs of Timber Structures" proved so helpful to architects and engineers during World War II that we have published a special printing as your guide in designing for present Civilian and Defense needs.

While the supply lasts, this 116-page book will be sent FREE to engineers who send us this ad clipped to their letterhead.

Timber fabricators in all sections of the country are ready to serve you—and there is plenty of lumber for all needs.

(ENR)

TIMBER ENGINEERING CO.
1319 - 18th ST., N.W., WASH. 6, D. C.

dewater the Complete way

Greater economy, greater speed of installation, greater flexibility in operation, greater success on all kinds of jobs in removing surrounding ground water—enabling you to handle the wettest work with greatest profit.

Write today for "Complete" catalog Dept. ER

COMPLETE MACHINERY & EQUIPMENT COMPANY, INC.
36-40 11th STREET
LONG ISLAND CITY, N. Y.

Branch Warehouse
3rd AVE. & ADAMS ST.
GARY, INDIANA

COMPLETE WELLPOINT SYSTEMS
FOR SALE OR RENT

LABOR

See no weakening of U.S. wage grip

There won't be any changes in government authority over wage increases this year. That much was apparent last week as Congress began work on overhauling the Defense Production Act.

The act expires June 30, and is now before the lawmakers for extension and revision. Both industry and labor have been violently concerned in the law and its coupling of wages to price controls—labor and Administration men generally opposing the linkage, industry favoring it.

But, in line with the reconstitution of the Wage Stabilization Board within the last few weeks (ENR May 17, p. 68) the indications in Washington are that this difference has largely been forgotten. Certainly, there has been no suggestion thus far for any change in the production act affecting wage stabilization.

• **Still some argument**—There is only a slim chance that Congress will dump wage controls—if there is any real fight, it'll be over the administration of them by WSB, rather than anything else.

Industry fought hard to keep wage stabilization separate from labor disputes settlement. Despite the reorganization of WSB to take on limited disputes functions (on certification from the President) industry doesn't feel it has lost—yet. It is taking its case to Congress in the current hearings on DPA extension—and it has a strong supporter in Sen. Taft, who has said labor disputes and stabilization can't be mixed, because wage policies might be compromised in order to settle a dispute.

In fact, Taft went a step further—he urged a further reorganization of the at present tri-partite WSB so that public members would have more votes than the industry and labor members combined. He pointed out that with all three sides having equal votes, it would be possible for industry and labor members to team up and outvote public members. Such an alliance, he said, could in effect scuttle wage stabilization.

Labor pushes for wage adjustments

Lending credence to Washington's opinion that the first job of the reconstituted Wage Stabilization Board will be wages—not labor disputes—were reports from construction centers throughout the U. S. last week.

In all but a few cases, the trouble centered around wages. And in all but a few cases, although work stopped at the local level, the final decision would rest with WSB's actions in Washington.

For instance, work stopped on the Tennessee Valley Authority's $88,000,000 Shawnee steam plant, near Paducah, Ky., where 1,300 construction workers walked out over wage grievances. The dispute was passed along to WSB.

Similarly, work was halted on a $5,000,000 office building for the State of Missouri at Jefferson City, where members of the hod carriers and laborers union walked out when they couldn't get a 15-cent-an hour raise made retroactive to March 1. Only 125 men walked out on the project, but other construction unions refused to pass picket lines.

And a number of California building projects were held up two weeks while AFL pile drivers negotiated with local contractors for a 10% wage increase, and inclusion of a subsistence up to $2.50 per day for men working away from their home areas. Other California unions—notably the operating engineers—were also carrying on discussions which they punctuated with "quickie" strikes, for more money. They finally got 10 percent.

• **Indiana strikes, raises**—While Indianapolis ironworkers stopped work for a short time in an attempt to get 9½ cents an hour in addition to a recent 15 cent-an-hour raise, the city's Building Contractors Association announced 10 to 15 cent-an-hour raises for all basic building crafts, under a three-year contract which has another year to run.

At Fort Wayne, 150 plumbers and steamfitters stopped all building construction for a week (until picket lines were removed). Both plumbers and employers had agreed on a 12½-cent hourly increase (to bring rates to $2.47½ an hour) but employers balked at a demand for a reopening clause to be used if the WSB's current 10% wage ceiling should be increased.

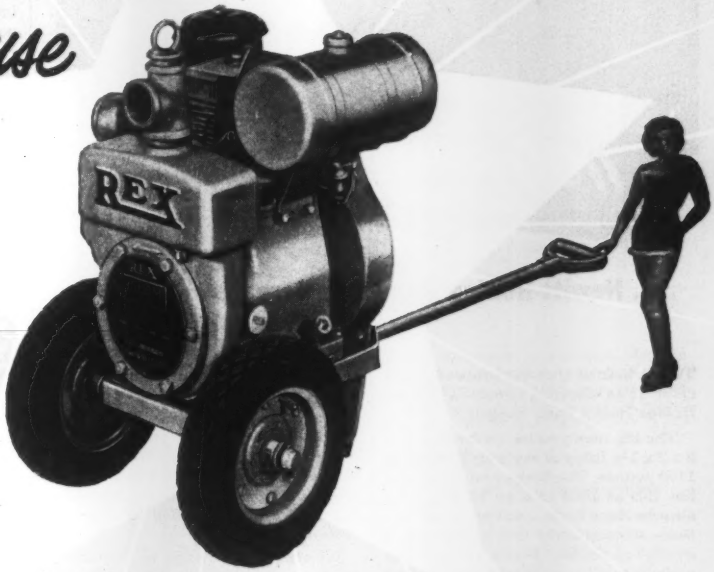
• **Other developments**—There were other elements in the boiling labor pot too:

A National Labor Relations Board trial examiner at Louisville, Ky., found that the Whittenberg Construction

(Continued on page 78)

HERE'S A STAR YOU'VE NEVER SEEN

...its brilliant performance proved by field test and field use



THIS STAR

PERFORMS FOR YOU IN THESE FEATURES:

★ *Simplest Pump Yet Designed*

★ *Removal of one cover plate* provides accessibility to practically all wearing and moving parts.

★ *Highly Portable . . .* low weight yet sturdy construction.

★ *Simplest, most positive leakproof seal* ever designed.

★ *The only pump which maintains "new pump" efficiency its entire life.* The *exclusive* patented Rex Adjustable Air Peeler does the trick.

Be sure to let your Rex Distributor explain the details and value of these features to you.

CHAIN BELT COMPANY
1633 W. Bruce Street, Milwaukee, Wis.

CHAIN BELT COMPANY 51-305
1633 W. Bruce Street, Milwaukee 4, Wis.
Please send me a copy of your new Pump Bulletin.

Name.....

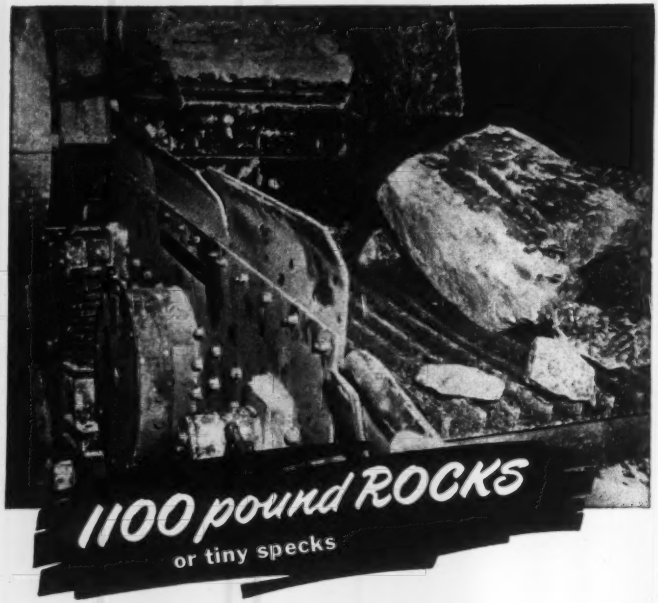
Company.....*Dept*.....

Street.....

City.....*State*.....

CHAIN BELT REX COMPANY ®

Construction Machinery



. . . Hewitt-Robins Vibrating Screens Process Them All!

Take a look at that big brute of a machine. It's a vibrating screen—a Hewitt-Robins Heavy Duty Scalper.

The big rock you see on its deck is a 3 x 2 x 1½ lump of ore weighing about 1100 pounds. The Scalper handles loads like this at 1000 tons an hour. Yet, it absorbs those loads—and its own vibration—so completely that a coin placed on edge on the base beams will stand up without toppling over *while the machine is running!*

The same company that makes this big brute also makes a small screen called a Ceramic Slip Lawn. This lawn is so precise in action, so effective in operation, that it finds and removes tiny specks of impurities—about ½ pound in every ton of material—from clay slip for pottery plants.

Think of that range—from 1100 lb. rocks to tiny specks! It's the best proof of all that Hewitt-Robins can satisfy *your* vibrating screen demands!

Just look at these facts: Hewitt-Robins originated the circle-throw principle for vibrating screens. Hewitt-Robins created the elliptical throw. Hewitt-Robins pioneered in both 4-bearing and 2-bearing vibrators. Hewitt-Robins introduced the full-floating principle of vibration-absorption.

Whatever you want in vibrating screen equipment, you can *safely* rely on Hewitt-Robins. Tell us your needs; we will supply the answer. Write to Robins Conveyors Division, 270 Passaic Avenue, Passaic, N. J.

HEWITT-ROBINS
VIBRATING SCREENS

HEWITT-ROBINS HR **INCORPORATED**

BELT CONVEYORS (*belting and machinery*) • BELT AND BUCKET ELEVATORS
CAR SHAKEOUTS • DEWATERIZERS • FEEDERS • FOAM RUBBER PRODUCTS
FOUNDRY SHAKEOUTS • INDUSTRIAL HOSE • MINE CONVEYORS • MOLDED RUBBER GOODS
RUBBERLOKT ROTARY WIRE BRUSHES • SCREEN CLOTH • SKIP HOISTS • STACKERS
TRANSMISSION BELTING • VIBRATING CONVEYORS, FEEDERS AND SCREENS

Labor . . .

Co. of Louisville had engaged in unfair labor practices. The company—a contractor on the Kentucky Ordnance Works near Paducah—had refused to hire 16 members of the International Association of Machinists. This, said Examiner Peter F. Ward, was discrimination against the union, and the company should pay the men what they would have earned had they been employed.

At Niagara Falls, N. Y., the Building Trades Council adopted a resolution calling on city officials to see that all construction work is done in accordance with building codes, and instructing union men not to work on jobs that violate the code.

And the National Constructors Association—a group of engineering and construction firms working in the chemical, steel and petroleum industries—came out with a recommendation that 48 hours be set as a maximum work week on special defense jobs, and that a 40-hour week be maintained otherwise.

Labor briefs . . . .

• **Unions must comply**—When jurisdictional disputes are decided by the National Labor Relations Board under the Taft-Hartley law, unions involved must notify NLRB within 20 days that they have complied with the decision. Otherwise, NLRB counsel said, unions will be liable to unfair practice charges. Until now, such reporting was optional—forcing the general counsel to prove non-compliance if an unfair practice charge was brought.

• **Stonecutters cut again**—After a seven-week strike over wages, 2,000 stonecutters in limestone quarries around Bedford, Indiana were back at work—at their old rates, pending WSB decision. The cutters demanded a total of 23 cents an hour raise, plus paid vacations, company-paid insurance, and other benefits. Only about 500 workers actually went on strike. But some 1,500 other were made idle.

• **Long strike, short agreement**—A building service employee local recently picketed the entire block site of Good Samaritan Hospital in Portland, Ore., including construction work on a new wing. Construction workers stopped work, but got busy explaining they had nothing to do with the strike. After 20 days, pickets were withdrawn to the hospital doors—permitting construction to go ahead, although the strike against the hospital management continues. It took just five minutes to reach this decision—after 20 days of no work.

CONSTRUCTION BUSINESS

Lumber stocks climb, price drop seen

Heavy stocks of lumber in dealers' yards—now reported at their highest since 1942—are the major factor in an apparent softening of lumber prices, a survey showed last week.

One such point is the Pacific Northwest, where pine 2x4's reportedly dropped $78–$83 per MFBM to $72–$78 a week ago (ENR May 17, p. 76).

• **Dealers cautious**—ENR's survey indicates that the average dealer, viewing his large inventory with some concern, is buying cautiously—not much more than enough to fill commitments already made.

Most dealers are waiting to see the effects of construction controls and defense building—and at the moment, a lot of them feel disappointed in the amount of business they are doing. A definite drop in home building has lessened lumber demand, and defense construction has not stepped up as rapidly as many expected.

• **Production up**—Meanwhile, production has continued at a high rate for all lumber, including the principal supplies—Douglas fir and western pine.

The National Lumber Manufacturers' Association reported that for the week ending May 5, both shipments and new orders dropped below production of their 483 mills.

It was in fact the second time this year—and the second straight week—that this had occurred. For the week, shipments were 3.0% below production, new orders were 14.2% below production. NIMA said that the reporting softwood mills had unfilled orders equivalent to 28 days' production at current rates.

Sales pressure by the mills was already being reported by dealers, and may become a real factor in a downtrend of lumber prices.

• **Reasons**—Reasons for the heavy inventories aren't hard to find.

Housing, for example, has been dropping in the past two months. The total of 88,000 starts reported by the Bureau of Labor Statistics for April brings total starts for the first four months of the year to 346,900, as compared to 412,300 in the same period a week ago. April starts, too, were well below April, 1950, when 133,400 starts were on the books.

Additionally, a reversal of the tight freight car situation has had an effect. There is now an abundance of cars: Mill operators with limited storage are loading and shipping lumber to wholesalers for disposal. Some transit shipments of fir have even been in distress recently, and have been sold at prices lower than originally asked.

• **Outlook**—Some producers would welcome a car shortage right now—but railroad men see no prospect of it, unless during the grain shipping season. But dealer spokesmen at the moment look on the situation as temporary—a cyclical downturn for a volatile commodity.

With construction volume holding to a high level, they don't think low prices can last long—but if buying and prices continue low, they figure production will slow down.

AEC to bring business into reactor work

After months of deliberation, the Atomic Energy Commission is now reported ready to allow four groups of business and industrial firms to participate to a much greater degree in reactor development projects.

First step will be special studies of the feasibility of having private industry build and operate reactors for the production of fissionable materials and power.

The new group of operators would include: Monsanto Chemical Co., and its associate, the Union Electric Co. of St. Louis; the Detroit Edison Co., and Dow Chemical Co. of Midland, Mich.; the Commonwealth Edison Co. and the Public Service Co. of Northern Illinois; and the Pacific Gas and Electric Co., and Bechtel Corp., of San Francisco.

Agreements offered to these companies provide that the companies study AEC's reactor program to determine the engineering practicability of designing, constructing and operating a materials and power producing reactor. The economic and technical aspects of building such a reactor, research and development work needed will be included in the reports.

Construction backlog keeps going up

With no apparent slackening in pace—but with a definite change in emphasis—engineering construction proposed in April but not yet under contract reached a total of $55,759,765,000.

Increase for the month in ENGI-

(Continued on page 80)

ON ALL KOPPERS PILES

This brand is *your* protection

The Brand Shows:

KOPPERS.....The Company Name
HO.....The Treating Plant (Houston, Tex.)
51.....The Year (1951)
C.....The Preservative (Creosote)
12.....The Retention (12 Lb. Per Cu. Ft.)

For *permanent* foundations—for *economical* foundations—specify Koppers Pressure-Creosoted Timber Piles. These piles are fully protected against insects and decay. They are low in first cost—usually lower than other permanent pile materials.

Koppers Piles are Branded

Koppers burns its brand into every one of its pressure-creosoted piles. This brand is *your* protection; it is *your* assurance of quality. And it plainly tells you and your inspector what you are getting in preservative and retention.

Accepted by Building Codes

Modern Building Codes — National, Regional and City—recognize the permanence of Pressure-Creosoted Piles in building foundations. Koppers Piles meet Code requirements.

Lengths up to 130 Feet

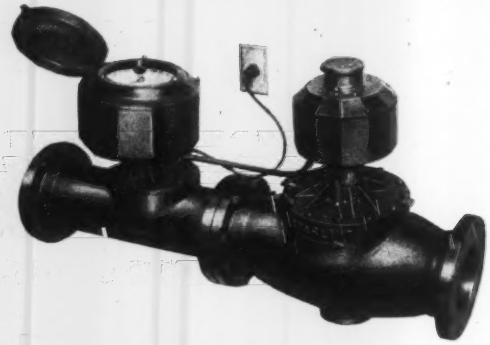
The next time you're in the market for foundation or marine piles, let us give you our quotation. Koppers Pressure-Creosoted Piles, up to 130 ft. in length, can be supplied.

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

KOPPERS PRESSURE-TREATED WOOD

KOPPERS

SPARLING MAIN-LINE METERS



And Now—
The METROVALVE

WATER FLOW CONTROL

With a Metrovalve on your main line you can change the rate of flow by turning the Selector knob with your thumb and finger! You can shut off the flow just as easily! Line pressure does the work.

As with all Sparling Meters, you have a complete Totalizing unit and can add flow-rate indication and recording, and controls for auto-metering.

For lines 3-inch to 16-inch.

Quotations and Bulletin 311 come at your request

SPARLING METER COMPANY
INCORPORATED

LOS ANGELES 54.....Box 3277
CHICAGO 8.....1500 South Western Avenue
SEATTLE 1.....1932 First Avenue
NEW YORK 17.....101 Park Avenue
626 Broadway.....CINCINNATI 2
6 Beacon Street.....BOSTON 8
726 Reserve Loan Life Bldg.....DALLAS 1
66 Luckie St., N.W.....ATLANTA 3

Stang WELLPOINT SYSTEM

For KNOW-HOW • ENGINEERING • SUPERVISION • EQUIPMENT • to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

JOHN W. STANG CORPORATION
2 Broadway, New York 4, N. Y. 2123 S. 56th St., Omaha, Nebr. 8221 Atlantic Ave., P.O. Box 631, Bell, Cal.

Construction business . . .

NEERING NEWS-RECORD's measured backlog was $596 million, compared to an increase of $524.9 million for March.

Change in emphasis, however, was apparent. Where public construction and commercial building (including mass housing) long held the lead, the big increase in April came in private industrial work.

For the month, private construction jumped upward by $422.4 million, to reach a near-record $20,212,618,000 on the planning books. Public construction of all types went up too—by $173.8 million, to reach an overall total of $35,547,147,000.

The largest component of the private construction work was industrial building, which gained a total of $292.4 million for the record total of $7,224,625,000. Commercial construction went up only $28.7 million for the month (it went up $36 million in March) to reach $7,189,297,000.

In the same month, Canada's measured backlog rose only $103 million, to reach an overall total of $9,844,888,000.

Utilities detail $7 billion expansion

Details of a $7-billion expansion program planned by U.S. electric utilities within the next three years —involving heavy construction work as well as expenditures for equipment —were developed in a survey made public last week.

According to Duff & Phelps, New York utility analysts, about $4.8 billion of the total expenditure will be raised through sale of securities. The money will go toward an 18% boost in electric output by the end of 1953. Utility experts think that supply can be kept abreast of demand during the period in all areas except the Pacific Northwest, where shortages have been predicted through 1954.

Among the plans of 59 major utilities, biggest are:

Nearly $586 million will be spent in the Pacific Northwest, to develop power on the Lewis and Columbia. Steam generating plants are also planned by the Montana and Utah light and power companies.

The Louisville Gas & Electric Co. plans a $90 million steam generating plant at Cane Run—an Ohio River tributary. United Gas Corp., one of the great integrated natural gas systems, has plans for $170-million worth of work which will include the 1,000-mi line of subsidiary United Gas Pipe Line Co.

(Continued on page 84)

17 pay yds. loaded in ¾ min.

Equipped for earning extra profits, this Tournadozer has Angledozer on front . . . 2-drum PCU on rear for scraper hook-up.

TOURNADOZER delivers fast pusher service for contractors on Delta Mendota canal

United Concrete Pipe Corp., Baldwin Park, Calif., and Vinnell Co., Inc., of Alhambra, have 10,000,000 cu. yds. of dragline and scraper dirt to move on excavation, embankments and earth linings for California's Delta Mendota Canal and Firebaugh Wasteway in the Central Valley Irrigation Project. Sections of extremely heavy, wet, tough-to-load clay have been assigned to a fleet of 3 LeTourneau veteran Super C Tournapulls, and 3 extra-capacity, crawler-drawn scrapers. Here's how a LeTourneau 180 h.p. Super C Tournadozer, used as pusher, keeps the 3 oversize crawler-scraper rigs "humping" through heaviest digging:

Makes contact every 1⅙ min.

With its instant speed selection, Tournadozer makes smooth pusher contact . . . 180 h.p. push puts 17 pay yards into the scrapers in 110′ distance, and an average loading time of only 45 seconds. 2nd gear does it! Complete pushing cycle, including load, back-up and spot for the next contact, averages 1 min., 10 seconds.

That's typical pusher performance for this mobile, quick-maneuvering Tournadozer. There's plenty of loading power and ground-grip traction in its 4-wheel drive on giant, 21.00 x 25, low-pressure tires. It steps into any of 4 fast forward gears, or 2 reverse, at a flick of a speed selector lever . . . no foot clutching, no stops for shifting.

Drove 169 mi. in 11 hours

United Concrete Pipe Corp., and Vinnell Company's Tournadozer drove 169 miles from Sacramento to their job at Firebaugh in 11 hours . . . averaged over 15 m.p.h. through city and highway traffic. With top speed of 19 m.p.h. on rubber, it's easy to see why Tournadozer runs fast from one job to the next . . . makes quick on-the-job moves . . . gets more work done wherever pushing, pulling and dozing power is needed.

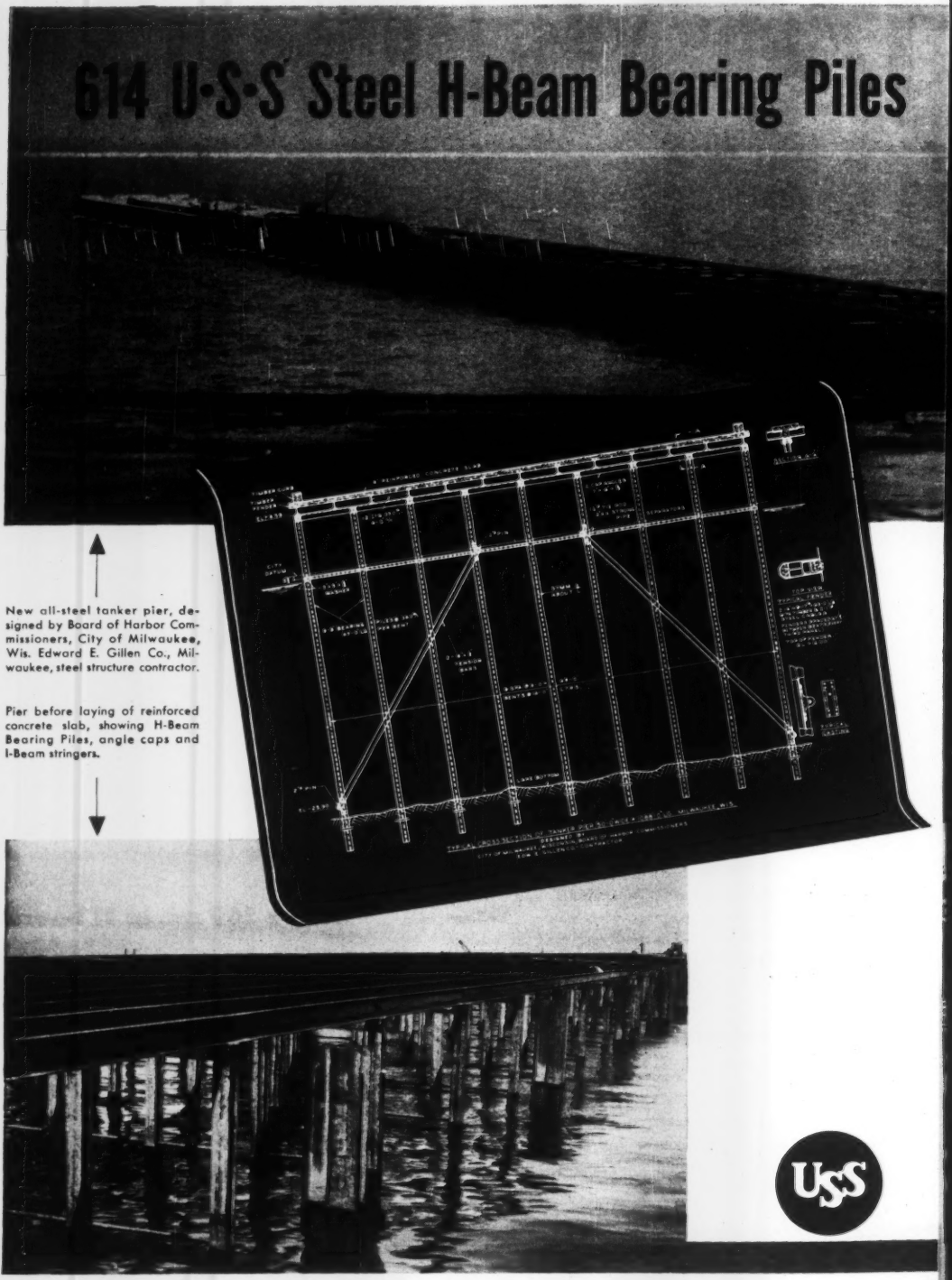
Better look into its big production possibilities . . . call your LeTourneau Distributor for more Tournadozer information NOW . . . don't wait another day!

Tournapull, Tournadozer, Angledozer—Trademark Reg. U.S. Pat. Off.

R. G. LeTOURNEAU, Inc. Peoria, Illinois

HIGH-SPEED, RUBBER-TIRED EXCAVATING · HAULING · LIFTING EQUIPMENT

614 U·S·S Steel H-Beam Bearing Piles

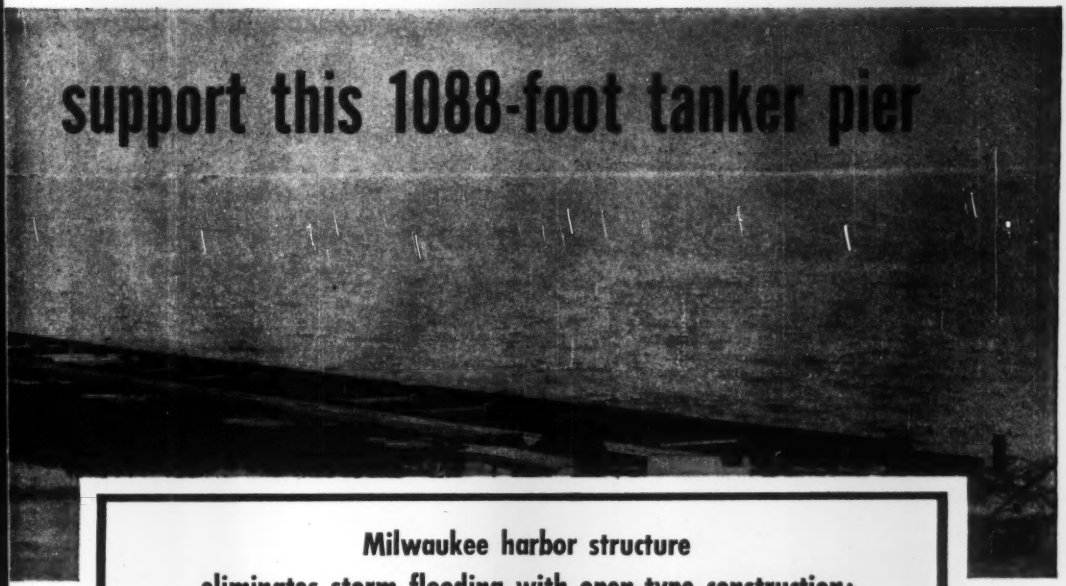


New all-steel tanker pier, designed by Board of Harbor Commissioners, City of Milwaukee, Wis. Edward E. Gillen Co., Milwaukee, steel structure contractor.

Pier before laying of reinforced concrete slab, showing H-Beam Bearing Piles, angle caps and I-Beam stringers.

USS

support this 1088-foot tanker pier



Milwaukee harbor structure eliminates storm flooding with open-type construction; makes use of tension members and unique fender system

● When Milwaukee's Board of Harbor Commissioners designed this new tanker pier, they were determined to eliminate the periodic flooding that northeast storms caused in the area surrounding an old closed-type pier. They accomplished this successfully with open-type construction utilizing U·S·S Steel H-Beam Bearing Piles. Under certain favorable conditions, this type of construction may prove economical.

The pier, 50 feet wide by 1088 feet long, consists of bents 16 feet on center. Each bent is constructed of nine 8-inch U·S·S Steel H-Beam Bearing Piles, capped by two 7 x 4 x 9/16-inch angles. On top of the angles are 13 rows of stringers—12-inch U·S·S Steel I-Beams spaced 4 feet on center. A 6-inch reinforced concrete slab rests on top of the stringers.

In place of batter piles, tension members were used, extending from the outside pile at lake bottom to the fourth column at water level. Careful alignment of bents was necessary and was accomplished by using pipe spacers and driving on outside columns until tension members were taut.

Each fender pile consists of two 14-inch U·S·S Steel H-Beam Bearing Piles 65 feet long welded together and faced with wood. Two 1-inch wire cables, three feet apart, are wrapped around each fender pile and extend to and around each successive pile.

Safe, permanent foundations

Strong, permanent, easily-driven U·S·S Steel H-Beam Bearing Piles have proved their ability to provide a secure means of supporting foundations in unstable materials of great depth.

Their capacity for high unit loads, both vertical and horizontal, permits fewer piles and fewer driving operations for a given load. They are readily handled in the field with ordinary equipment . . . easy to splice . . . eliminate jetting . . . withstand rough handling.

UNITED STATES STEEL COMPANY, PITTSBURGH • COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

STEEL H-BEAM BEARING PILES

UNITED STATES STEEL

FOR ROAD BUILDERS—who demand longer-lasting and trouble-free equipment there is no better buy than Heltzel steel forms, Heltzel portable bulk cement plants and Heltzel portable aggregate plants. On every concrete highway and airport project you will find men who know the dollars and cents value of Heltzel equipment.

PORTABLE BATCHING PLANTS—Portable aggregate plants in capacities of 30, 45, 52, 72, 85 and 100 tons. Portable bulk cement plants in capacities of 100, 200, 300 and 400 barrels — and 9 sizes of portable recirculators to assure reserve storage to meet every requirement. Standard batchers will service 34E pavers — or dual batchers for the fastest batch truck operation obtainable.

HIGHWAY-AIRPORT FORMS—Standard forms for highway and airport construction are all-welded steel — featuring wide tread, upturned base flange and 5 rigid supports per form. Heltzel's exclusive dual duty forms are demanded by contractors who want one set of forms to pour two slab thicknesses from 6" to 24."

Write for of contractors' literature

Construction business . . .

Georgia Power Company of Atlanta plans a $99 million expansion over three years; the Long Island Lighting Co. of New York weighs in with plans to spend $134 million.

Business briefs . . .

• **Beating shortages?**—California now has a new law that permits the state to pay contractors a progress payment up to 90% of the materials purchased by the contractor. The measure is designed to encourage purchase of supplies in advance of their use as work progresses, to beat the shortages of materials.

• **Slum clearance**—The National Capital Park and Planning Commission—pushing for Washington's first major slum clearance project—has employed Harland Bartholomew, of Harland Bartholomew Associates, St. Louis, as consultant. Planned is clearing of a large sector in the southwest part of the capital city.

• **Texas will carry ball**—In a general notice to bidders, the Texas Highway Department said it would apply for necessary NPA clearance on any projects now up for bids that require such approval. Pending approval by NPA, road bureau officials said, bids will be opened and read on schedule, but contracts will not be awarded until clearance is obtained.

• **Tax on materials**—A three percent sales and use tax in South Carolina (which becomes law July 1) will apply to purchase of all construction materials too, state officials said. Levies upon gross proceeds of sale of any single article include: $25 on article not exceeding $1,500; $40 on article not exceeding $3,000; and $75 on articles above $3,000.

• **Biggest aluminum plant**—One of the world's biggest aluminum plants is now under construction for Reynolds Metals Co. at Corpus Christi. The $80,000,000 reduction plant will have a capacity of 150 million pounds yearly (Alcoa's Port Lavaca plant will produce 114 million pounds), will occupy a 2,000 acre site. J. Gordon Turnbull Inc., Cleveland, is consulting engineer. Contractors are Henry C. Beck and H. R. Henderson & Co., Marshal, Texas.

• **Offices**—A new, $16,000,000 office building addition to the Massachusetts State Capitol at Boston is included in the governor's recently submitted capital outlay budget.

"Specials" are a Specialty of LOCK JOINT...

Elbows, wyes, tees, crosses, outlets, manholes, reducers, bevels, adaptors... *any* special pipe you require is available in standard Lock Joint design. And if standard specials won't do the job, "special" specials may be designed to individual specifications. Lock Joint Concrete Pressure Pipe can be connected swiftly and efficiently to any standard water pipe of other material. All specials are engineered with the same care and high safety factor that have made Lock Joint the pipe of unexcelled durability and dependability.

LOCK JOINT PIPE COMPANY

Est. 1905

P. O. Box 269, East Orange, N. J.

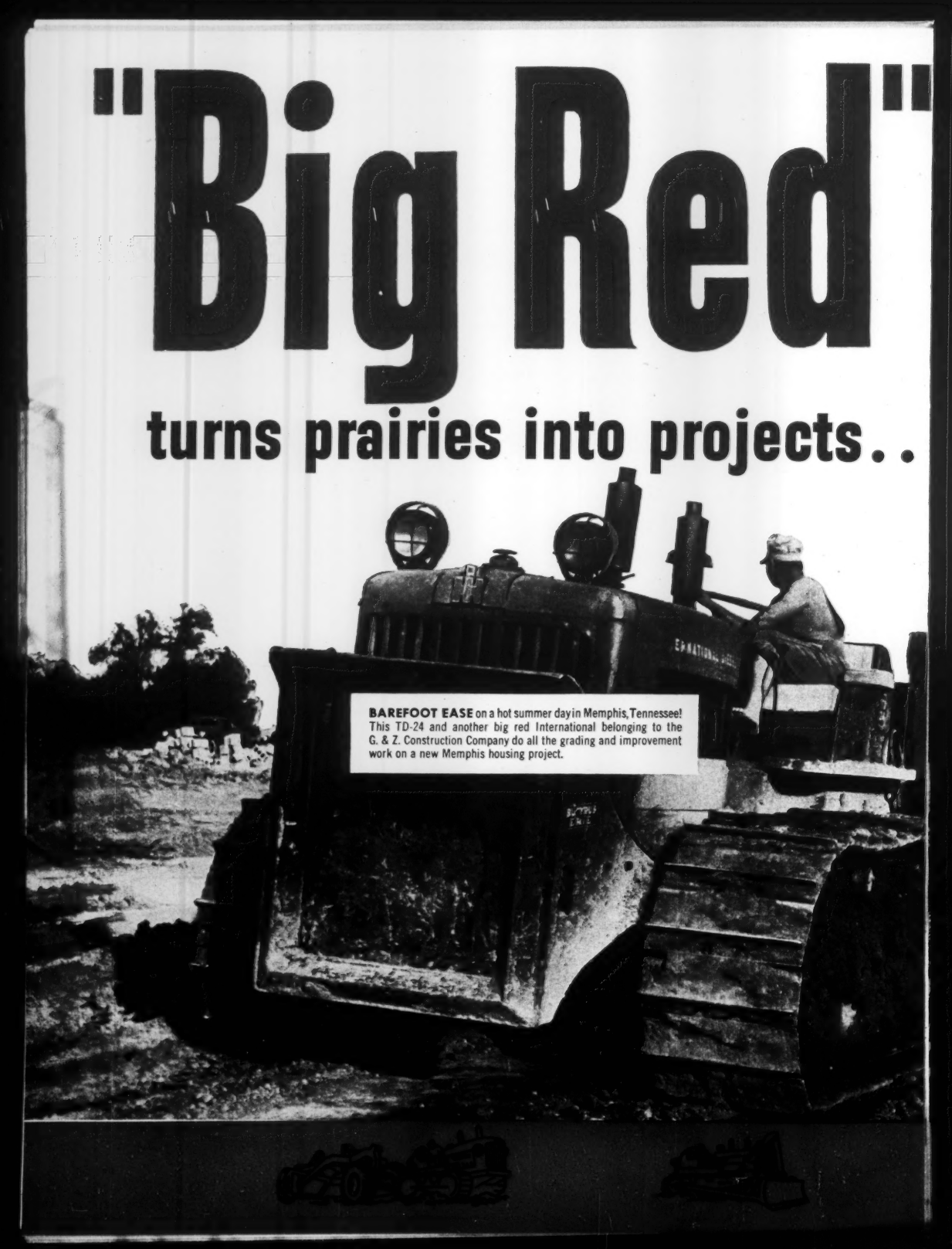
PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich.

BRANCH OFFICES: Casper, Wyo. • Cheyenne, Wyo. • Denver, Col. Kansas City, Mo. • Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. Wichita, Kan. • Kenilworth, N. J. • Hartford, Conn. • Tucumcari, N. Mex. Oklahoma City, Okla. • Tulsa, Okla. • Beloit, Wis. • Hato Rey, P. R.

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipes of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

"Big Red"

turns prairies into projects..



BAREFOOT EASE on a hot summer day in Memphis, Tennessee! This TD-24 and another big red International belonging to the G. & Z. Construction Company do all the grading and improvement work on a new Memphis housing project.

TD 24

Contractors tighten up the time cycles with International's "Big Red" champ

When the champ "goes domestic" and the world's most powerful crawler turns to housing projects, towns take shape while you watch.

When the TD-24 lets loose its power and speed to grade a road, fill a swamp, or doze off home sites on hillsides—the work gets done almost before you can say "Where's the concrete?"

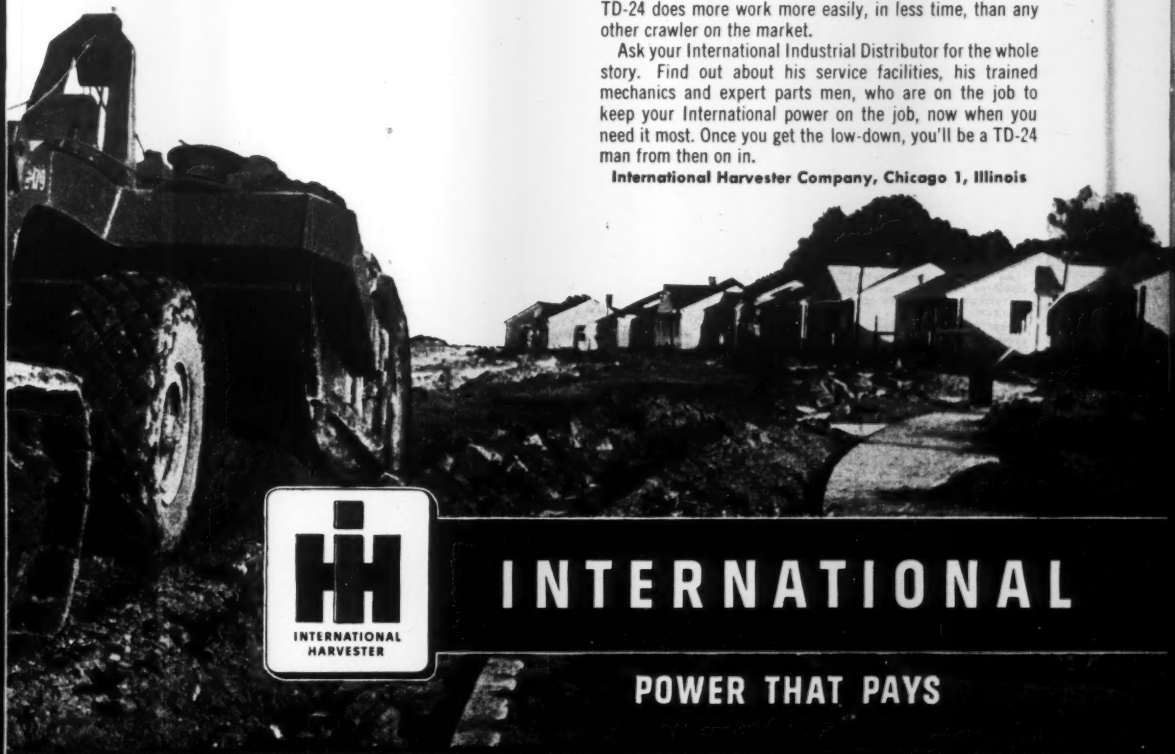
Here's what's behind it—here are the facts that make the big red International TD-24 the champ of the time cycle:

- **148 maximum drawbar horsepower—more than any other crawler.**
- **Eight forward speeds, eight reverse.**
- **Speeds up to 7.8 mph in either direction.**
- **Synchromesh transmission—you shift "on-the-go."**
- **Exclusive International push-button, all-weather starting.**
- **Planet Power steering—with finger-tip control for pivot turns, feathered turns, turns with power on both tracks plus instant shift up or down one gear without declutching.**
- **Reserve torque overcomes overloads, increases drawbar pull for bigger scraper and bulldozer loads.**

Contractors, operators, men who know performance are passing the word around. They're telling each other how the TD-24 does more work more easily, in less time, than any other crawler on the market.

Ask your International Industrial Distributor for the whole story. Find out about his service facilities, his trained mechanics and expert parts men, who are on the job to keep your International power on the job, now when you need it most. Once you get the low-down, you'll be a TD-24 man from then on in.

International Harvester Company, Chicago 1, Illinois



INTERNATIONAL HARVESTER

INTERNATIONAL

POWER THAT PAYS

FOR LONG LASTING, HEAVY DUTY
DRIVEWAYS
TRUCKING AISLES
INDUSTRIAL FLOORS
AND THE LIKE

Specify

"ARMOURING"
TRADE MARK

THE ORIGINAL STEEL MESH
FLOOR SURFACE REINFORCEMENT
SHOCK-PROOF
WEAR-PROOF
CRACK-PROOF

• Catalog on Request

IRVING SUBWAY GRATING CO., INC.
5063 27th St., Long Island City 1, N. Y.
1863 Tenth St., Oakland 20, Calif.

WELDING CONNECTORS
Saxe System Welded Connection Units for welded assembly

Saxe Units place in position and securely hold together structural parts to be welded.

As used in many welded structures they eliminate all hole punching, producing an economical, rigid, safe and quickly erected structural frame.

Write for 58 pg. Manual containing full engineering design information for welded structures.

J. H. WILLIAMS & COMPANY
Buffalo-7, New York
Canadian Representatives
Air Reduction Canada, Ltd. Montreal 2, Canada

DRILLING
ANYWHERE

We look into the earth

PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH, PA.

Construction business . . .

UNIT PRICES BID BY CONTRACTORS

North Poudre Canal, tunnel in Colorado

A total of 8 bids were received on the six sections of the North Poudre Diversion Dam and North Poudre Supply Canal, part of the Colorado-Big Thompson Project, Colo.

On the supply canal, section 6, the low bid was 9.5% below the engineer's estimate, and 8% below the second low bid. The five bids, presented March 28 to the Bureau of Reclamation, were 28.6% apart.

Section 4, 1.75 miles of tunnel, drew 4 bids, 24% apart. The low bid was 9% below the engineer's estimate and 14.5% lower than the 2nd bid.

The work is located 15 miles northwest of Fort Collins, Colo. Both jobs include excavation and the concrete lining of tunnel and canal. Minimum wage rates are: timbermen and blasters, $1.70; truck drivers, $1.45-$2.00; equipment operators, $1.55-$2.25.

Bidders on the tunnel included:

1 G. L. Tarlton Contracting Co., St. Louis, Mo.	$908,141.00
2 Peter Kiewit Sons' Co., Denver, Colo.	1,061,740.00
4 Gibbons & Reed Co., Salt Lake City, Utah	1,188,867.00
Engineer's estimate	1,001,110.00

Items	Quantity	Unit prices 1	2
Excav. in open cut, common, cy	7,800	$1.65	$1.25
Rock, cy	4,300	1.65	2.30
In tunnel, all classes, cy	25,000	23.40	29.00
For tunnel enlargement, all classes, cy	70	23.40	50.00
Backfill, cy	40	1.00	1.50
Compacting bkfl, cy	20	5.00	3.00
Furnish & install: Permanent steel tunnel support, lb	105,000	0.13	0.15
Tunl roof support bolt, lf	1,300	3.00	3.75
Furn & erect perm timber in tunl, Mbm	41	170.00	225.00
Drill feeler or pilot holes ahead of tunl excav, lf	900	1.00	1.75
Drill grout holes through conc tunl lining, lf	900	2.00	2.00
Furn & place grout pipe & connection, lb	900	1.00	1.00
Pressure groutng, cf	9,000	1.75	2.00
Concrete in struct, cy	75	60.00	70.00
In tunl lining, cy	6,800	25.50	26.10
Furn & handle cement, bbl	12,640	5.50	5.50
F & place reinf bars, lb	11,300	0.16	0.15
Place rubber water stops in joints, lf	100	3.00	5.00
F & constr 6" dia tunl drains, lf	600	10.00	6.00
F & lay 6" dia sewer pipe with cem joint, lf	600	3.00	5.00
F & install: Weep pipes in tunl lining, lb	100	1.00	2.50
Misc metalwk, lb	100	1.00	0.60

Bidders on the canal were:

1 Adler Constr. Co., Loveland, Col.	$756,450.00
2 Peter Kiewit Sons' Co., Denver,	821,772.25
5 A. S. Horner Constr. Co., Denver	1,058,473.00
Engineer's estimate	835,531.70

Items	Quantity	Unit prices 1	2
Excav for canal, common, cy	221,000	$0.38	$0.71
Rock, cy	122,000	1.35	0.71
Overhaul for canal, sta cy	265,000	0.025	0.01
Compact embankm, cy	62,000	0.25	0.22
Excav for drainage channels, diversion channels & dikes, common, cy	20,000	0.50	0.45
Rock, cy	2,000	2.80	2.50
Trim earth foundations for conc canal lining, sy	11,000	0.70	1.70
Prepare rock foundation for conc canal lining, sy	16,000	1.80	1.70
Excav for struct, comm, cy	23,000	0.85	0.55
Rock, cy	5,500	3.50	2.00
Backfill about struct, cy	19,000	0.30	0.66
At top of conc lining, cy	1,600	1.00	1.50
Compact backfl, cy	7,500	3.50	3.00
Dry-rock paving & gravel bedding, sy	5,000	2.50	3.00
18" riprap, cy	2,000	2.50	5.00
Gravel bedding under riprap, cy	70	5.00	4.00
Excav, roadwy, all class, cy	2,300	1.20	0.71
Select roadwy borr, cy	1,550	0.50	0.71
Gravel or broken-rock surfacing, cy	130	2.50	3.00
Overhaul of selected roadwy borrow, sta cy	200	0.05	0.05
Of gravel or broken-rock surfacing, sta cy	51,500	0.03	0.01
Furnish & place base course, bitum surface, ls	.....	550.00	1,200
Conc in struct, cy	2,400	46.00	70.00
In canal lining, cy	1,000	22.00	22.00
Furn & handle cement, bbl	8,100	5.00	5.50
F & place: reinf bars, lb	311,000	0.14	0.15
½" elastic filler mat'l in joints, sf	25	2.00	1.75
Place rubber water stops in joints, lf	1,500	1.25	1.25
Furn & erect: Timber in structures, treated, Mbm	3	285.00	400.00
Untreated, Mbm	29	220.00	380.00
Construct spring protection structures, ls	.....	850.00	1,500
Furn & lay: Standard strength conc-culvert pipe, 24", lf	193	8.50	7.00
30", lf	160	10.70	10.00
36", lf	176	13.50	12.00
42", lf	640	17.00	16.00
48", lf	240	21.70	21.00
60", lf	255	34.50	35.00
66", lf	255	40.00	41.00
72", lf	170	46.00	50.00
Extra strength, cc pipe, 30", lf	128	11.75	10.50
48", lf	136	27.00	26.00
Corrugated-metal pipe, 24" dia, lf	52	6.00	7.00
36", lf	29	12.00	12.00
F & constr cattle guards, ea	2	400.00	450.00
Remove fence, mi	1.5	300.00	200.00
Furn & erect: Barbed-wire fence, mi	6.5	1,500	1,700
Wire cable fence, lf	140	3.50	5.00
Furn & install: Wire fence gate, ea	4	15.00	20.00
Misc. metalwk, lb	700	0.70	1.00
Furn & construct canal fence structures, ea	7	60.00	350.00

Airport landing strip for Newcastle, Wyoming

A low bid, 3% below the next to low bid, was awarded the contract for the Newcastle Municipal Airport landing strip. Six bids, 21% apart, were opened March 26 by the City of Newcastle, Wyo. Julian Staven of Rapid City, S. D., is consulting engineer.

Consisting of grading, draining and surfacing the runway, taxiway and apron, the job also includes the installation of a segmented circle and windcone.

Wage rates to be paid are: common labor, $1.25; semi-skilled, $1.70; and skilled $2.10.

Bidders included:

1 Inland Constr. Co., Omaha, Neb. (Contract)	$35,581.40
2 Kinisley-Moore Co., Douglas, Wyo.	36,836.80
6 Summit Constr. Co., Rapid City, S. D.	45,187.30

Items	Quantity	Unit prices 1 C	2
Excav, uncias, cy	63,790	$0.27	$0.35
Subbase, cy	3,653	2.10	2.00
Pipe Culvert, 18", lf	140	6.30	4.50
30", lf	340	13.30	8.50
Segment circle marker, ea	16	60.00	34.00
12' windcone, unlighted, ea	1	850.00	1,550
Remove existing fence, lf	800	0.07	0.15
Constr new fence, lf	4,900	0.25	0.30

You haul more loads...more miles...*for less!*

when you "grease on the go" with

ALEMITE

portable service stations

You Save Time by bringing complete power lubrication to trucks, tractors, equipment right on the job! Air-operated pumps deliver grease "refinery clean" direct from barrel-to-bearing.

You Save Money by cutting the costly "downtime" required for lubrication, thereby increasing the output of both your men and equipment.

You Save Equipment by keeping your earthmoving rigs running smoother, longer—no matter how far afield they may be! And, you reduce greatly the possibility of bearing failures.

Add 'em . . . group 'em into just the rig you want!

Alemite Units are S·E·C·T·I·O·N·A·L·I·Z·E·D

You can suit your needs *exactly* with Alemite! Whatever selection of chassis or gear-oil pumps and reels you require for 100 lb. drums, you can easily combine them into one portable rig for on-the-job lubrication!

Other Alemite Portable Service Stations are also available for 400 lb. and 54 gal. capacity drums.

Send today for free illustrated catalog describing this equipment. Write to Alemite, Dept. SP-51, 1850 Diversey Parkway, Chicago 14, Illinois.

Alemite Pumps. Air-operated for delivering pressure gun grease and gear oil from original drums. Available for individual or "group" installation.

Alemite Hose Reels. For high and low-pressure delivery of pressure gun grease, gear oil, and air. Available in single or multiple units to suit any requirement.

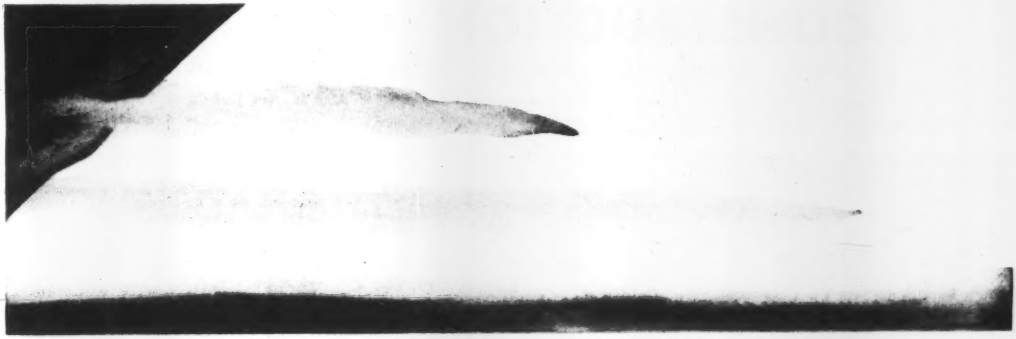
ALEMITE

REG. U.S. PAT. OFF.

American Product of STEWART WARNER

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville



tax savings for the future

Three billion, two hundred and fifty million dollars*—that's what it will take to foot the bill for new water system construction so urgently needed by the American people during the next ten years!

For the thousands of communities that must carry a share of this additional investment, the vital need for water system expansion is most unwelcome at this time in the face of constantly rising costs.

This means that, wherever possible, water works officials will be called upon to keep an exceptionally close watch on expenditures . . . to see that the money laid out for new systems brings the greatest possible return to the taxpayer.

Since a sizable part of the cost of any water system involves the supply and distribution lines, an important question to be answered by these officials will be: "Which pipe will give the greatest return from this portion of our investment?"

Thousands of communities have already found the answer to this question in Transite Pressure Pipe.

A threefold warranty of economy is built into every length of Transite Pressure Pipe . . . the modern pipe developed by Johns-Manville through research and engineering to carry water more efficiently:

1. ***Long service life*** . . . because Transite Pipe is made of three inherently corrosion-resistant materials—asbestos, cement and silica—and is steam cured under pressure by a special Johns-Manville process which assures *maintained strength in service*. Carefully kept records of performance in highly corrosive soils prove that conditions which seriously weaken other pipe materials have little effect on Transite.

2. ***Low operating costs*** . . . because Transite Pipe has a smooth interior surface which provides a high water-carrying capacity (C=140). Moreover, because Transite cannot tuberculate, this high carrying capacity *remains* high through the years. Pumping costs, as a result, stay low. Delivery of a full volume of water at lowest operating cost is assured.

3. ***Maximum water economies*** . . . because Transite Pipe has tight, yet flexible joints that *stay* tight in service. These joints absorb vibration and soil stresses, cut down on costly underground water leakage. This is especially important today when water supplies in many localities must be conserved to the limit to meet constantly increasing water consumption.

In addition to these assurances of tax savings for the future, Transite Pressure Pipe offers many *immediate* economies, such as important savings in time and money during installation . . . further sound reasons why it will pay you and your community to specify Transite for the greatest return from your pipe investment.

*From THE WALL STREET JOURNAL, May 26, 1950

For complete information write Johns-Manville, Box 290, New York 16, N. Y.

TRANSITE PRESSURE PIPE

Transite is a registered Johns-Manville trade mark

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **R. I., Quonset Point**—RUNWAY—B.A. 5/29—P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., exten. Runway 16-34 at U. S. Naval Air Station, Spec. No. 28172. Plans deposit $60. CD 4/2.

† **Vt., Burlington**—AIRPORT—Bids Asked—U. S. Eng., P. O. Box 2316, Boston 7, Mass., (selected list bidders) parking aprons, taxiways and runway extens., etc. at Burlington Municipal Airport.

BIDS ASKED—BUILDINGS

▲ **Mass., Lynn**—HOUSING—B.A. 5/29—City of Lynn Housing Auth., 58 Andrews St., 300 units housing Proj. Mass 23-1, Holyoke St. $3,000,000. Plans deposit $100. CD 8/25/50.

LOW BIDDERS—BUILDINGS

City, Municipal Bldg., New Bedford, Mass. rejected bids Feb. 8, vocational high school addn., alterations, 415 Ash St., NEW BEDFORD, MASS. C. A. $542,-727. Will re-advertise. CD 4/23, under CA.

Mitola Bros., Inc., Georgia Ct., Providence, R. I. Low Bidder. $514,258, construct, manage, finance, Military HOUSING, 52 family dwelling units to be constructed on Govt.-owned land at Middletown, Proj. No. N-25, NEWPORT, R. I. Pub. Wks. Officer, First Naval Dist., 495 Summer St., Boston, Mass. Bids May 2. CD 4/13.

▲ **Southern New England Constr. Co.**, 983 Main St., Hartford, Conn. Low Bidder, $1,085,000. elementary SCHOOL, Slater Rd., NEW BRITAIN, CONN. Bd. Educ., 27 Hillside Pl., New Britain, Conn. Bids May 3. CD 4/10.

Associated Constr. Co., 1010 Wethersfield Ave., Hartford, Conn. Low Bidder, $655,000. elementary SCHOOL, off Farmington Ave. and Cottage St., PLAINVILLE, CONN. Town, Bd. Educ., High School Bldg., Plainville, Conn. Bids May 1. CD 4/9.

CONTRACTS—HEAVY CONSTRUCTION

▲† **Gil Wyner Co., Inc.**, 12 Newind St., Malden, Mass. and **Campanella & Cardi Constr. Co.**, 780 Jefferson Bldg., Hillsgrove, R. I. Contract Awarded. $8,000,-000. parking aprons, warm-up pad, taxiways, runway extens. utilities, refueling sys., Limestone Air Force Base, LIMESTONE, ME. U. S. Eng., P. O. Box 2316, Boston 7, Mass. CD 11/7.

† **Charles Logue Bldg. Co.**, 331 Newbury St., Boston, Mass. Contract Awarded. $800,000. airmen's mess, dormitories, organizational supply bldg., bachelor officer's quarters, CHICOPEE FALLS, MASS. Air Force Dpt., Westover Air Force Base, Chicopee Falls, Mass. Bids May 11.

CONTRACTS—BUILDINGS

Tredennick-Billing Co., 10 High St., Boston, Mass. Contract Awarded. $700,000. PLANETARIUM, Charles River Dam, BOSTON, MASS. Boston Museum of Science, Science Park, Boston, Mass. CD 2/26.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

Md., White Oak—B. A. 5/31—Pub. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., water conservation for bldg. 20, connection of low temperature test refrigeration equip. to existing cooling tower at Naval Ordnance Laboratory, Noy 7429, Spec. 29343. Plans deposit $10. CD 7/26/48 under public bldgs.

Pennsylvania—B.A. 6/6—Dpt. Property & Supplies, 1400 N. 9 St., Harrisburg, repairing Reining Pound Dam, Wayne Co. John H. Wickersham, 14 S. Duke St., Lancaster, engr.; repair and replacement Big Spring Dam, Cumberland Co. Gannett, Fleming, Corddry & Carpenter, 600 N. 2 St., Harrisburg, engrs. Plans deposit $5 each.

BIDS ASKED—BUILDINGS

▲ **N. J., New Brunswick**—INSTITUTE—B.A. 5/29—Bd. Trustees, Rutgers University, New Brunswick, Waksman Institute of Microbiology on Campus, $1,-000,000. CD 10/1/45.

† **N. J., Trenton**—POST OFFICE REPAIRS—B.A. 5/29—Public Bldgs. Service, 250 Hudson St., New York 13, N. Y., misc. repairs to U. S. Post Office.

Pa., Danville—CHAPEL, etc.—B.A. 5/29—General State Auth., 18 and Herr Sts., Harrisburg, chapel, auditorium and gymnasium at Danville State Hospital, $366,500. Plans deposit $10. Von Storch & Pearce, 506 Spring St., Scranton 3, Pa., archts. A. F. Jones, c/o owner, ch. engr. CD 6/12.

† **Pa., Annville**—BUILDINGS—B.A. 6/1—Dpt. Army and Air Force, National Guard Bureau, Acting U. S. Property & Disbursing Officers for Pennsylvania, R. D. 2, rehabilitation of 33 frame bldgs. at Indiantown Gap Military Reservation. CD 2/1.

† **N. Y., Voorheesville**—WAREHOUSES—B.A. About 6/7—U. S. Eng., 80 Lafayette St., New York, Zone 13, warehouses for storage of inflammables at Schenectady General Depot, No. Eng 30-075-51-634. Approx. $600,000. Plans deposit $15. CD 11/30.

▲ **Md., Parkville**—SCHOOL—B.A. 6/7—Baltimore Co. Bd. Educ., Aigburth Rd., Towson, 2 story, part bsmnt., brick, concrete Parkville High School, $2,000,000. Plans deposit $60. Palmer, Fisher, Williams & Nes, 1020 St. Paul St., Baltimore, archts. Van Renssalaer Saxe, 1701 St. Paul St., Baltimore struct. engr. Egli & Gompf, Inc., 1019 Calvert St., mech. engr. CD 9/6.

▲ **Pa., Hollidaysburg**—DIETARY, HOSPITAL—B.A. 6/13—General State Auth., 18 and Herr Sts., Harrisburg, dietary bldg., $750,000. Plans deposit $10; hospital bldg. for continued care patients, $1,000,000, Plans deposit $25, at Hollidaysburg State Hospital, Clayton J. Lappley, Riverview Manor, Harrisburg, archt. A. F. Jones, c/o owner, ch. engr. CD 12/11/50 and 9/29/49.

LOW BIDDERS—HEAVY CONSTRUCTION

Gardner Constr. Corp., 4 Platt St., New York 38, N. Y. Low Bidder. $220,413. Parking Field 1, incl. refreshment stand and comfort station at Jones Beach State Park, Nassau Co., NEW YORK. Long Island State Park Comn., Belmont Lake State Park, Babylon, N. Y. Bids May 4. CD 4/19.

P. J. Carlin Constr. Co., 101 Park Ave., New York 17, N. Y. Low Bidder. $653,610. Secondary sewage treatment works at present municipal sewage disposal plant, incl. two 105 ft. diam. stone filters; two 105 ft. diam. clarifiers, one new digester, two enclosed sludge drying beds and pumping stations, incl. piping, fittings, concrete structures, MIDDLETOWN, N. Y. Board Estimate & Apportionment. G. W. Chumard, comr. P. Wks., City Hall, Middletown. N. Y. Bids Apr. 23. CD 4/2.

Weldon Contg. Co., 113 Central Ave., Westfield, N. J. Low Bidder, $462,921, c. conc. and bit. surf. 2.1 mi. Route 44 and bridging of Big Birch Creek between Bridgeport and Nortonville, Gloucester Co. NEW JERSEY, State Hy. Dpt., State Office Bldg., Trenton, N. J. Bids May 2. CD 4/13.

John F. Lafferty, Chapel Ave., Merchantville, N. J. Low Bidder. $513,182. Road constr. and sewer. constr. Broadway, etc., CAMDEN, N. J. Bd. Freeholders, Camden Co., City Hall, Camden, N. J. S. Herbert Taylor, co. engr.

LOW BIDDERS—BUILDINGS

H. B. Alexander & Son, 315 Vaughn St., Harrisburg, Pa. Low Bidder. $550,000. General constr. HIGH SCHOOL, CAMP HILL, PA. Camp Hill School Bd. Boro Hall, Camp Hill, Pa. Bids May 8. CD 4/24.

John P. Donovan, 225 S. 15 St., Phila., Pa. Low Bidder. $500,000. DORMITORY and CHAPEL, MALVERN, PA. St. Josephs in The Hills, 104 Channing Ave., Malvern, Pa. CD 9/1.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

Rupert Constr. Co., 3400 Lancaster Ave., Wilmington, Del. Low Bidder. $815,000. HOSPITAL addn., MILFORD, DEL. Milford Memorial Hospital, Milford, Del. Louis H. Doone, Penna Bldg., Wilmington, Del., engr. Bids May 5. CD 4/18.

CONTRACTS—HEAVY CONSTRUCTION

Cayuga Constr. Co., 30 Vesey St., New York 7, N. Y. Contract Awarded, $414,500. Fdns. for connections to Henry Hudson Parkway, Stage I, at Manhattan approaches of George Washington Bridge, Contr GWB 130.001, NEW YORK, N. Y. Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids May 8. CD 4/12.

Lipsett, Inc., 80 Wall St., New York, N. Y., $191,089. Contract Awarded, dismantling old low-level Route 35 Manasquan River Bridge, Monmouth and Ocean Counties, NEW JERSEY State Hy. Dpt., Trenton, N. J. Bids May 2. CD 4/13.

CONTRACTS—BUILDINGS

E. M. D. Realty Corp., 1386 Ralph Ave., Brooklyn 12, N. Y. Owner Builds. Approx. $115,000. 2 story FACTORY, 1370-1378 Ralph Ave., BROOKLYN, N. Y. M. L. Reise, 186 Joralemon St., Brooklyn 2, N. Y., archt.

W. L. Ostreicher Co., Inc., 265 Great Neck Rd., Great Neck, N. Y. Contract Awarded. $304,412. Cumberland Community SCHOOL, GREAT NECK, N. Y. Bd. Educ., Union Free School Dist., 345 Lakeville Rd., Lake Success, N. Y. Bids Apr. 26. CD 4/12.

▲† **Tandy & Allen, Inc.**, Pascack Rd., Hillsdale, N. J. Contract Awarded. $1,576,395. Row HOUSING, consisting 119 family apartments in 16 bldgs. at U. S. Military Academy, WEST POINT, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Mar. 29. CD 3/1.

Wigton-Abbott Corp., 1225 South Ave., Plainfield, N. J., Contract Awarded, $150,000, chemical pharmaceuticals PLANT, NUTLEY, N. J. Hoffman-LaRoche Inc., Nutley, N. J.

Mittleman & Sons, 6353 Calvert St., Phila., Pa. Separate Contracts. $500,000. RESIDENTIAL DEVELOPMENT, Revere St., PHILA. PA. Christian H. Fries, 3701 N. Broad St., Phila., Pa., archts.

Linden Marvel, Seaford, Del. Contract Awarded. $82,-000. 1 story, 6,750 sq. ft. masonry feed WAREHOUSE and OFFICE, SEAFORD, DEL. O. Glen Mears & Co., Inc., Seaford, Del.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **Va., Chincoteague**—RUNWAYS, etc.—B.A. 5/29—Pub. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, runway extens. and addnl. imprvs. at U. S. Naval Aviation Ordnance Test station-Naval Air Facility, NOY 28414, Spec. 30065. Plans deposit $25.

† **Fla., Key West**—FIRE and SAFETY PROTECTION—B.A. 5/31—Dpt. Navy, U. S. Naval Air Station, Jacksonville, fire and safety protection at Bldgs. 141-158 and 168, U. S. Naval Air Station, JACKSONVILLE, NOY 27260, Spec. 29404. Plans deposit $10. CD 12/26.

Va., Richmond—B.A. 5/31—At office J. W. Huffman, city purch. agt., Mosque Bldg., Laurel and Main Sts., plain concrete sewers, catch basins, installing gas and water mains, install electric conduits and manholes, remove car tracks, asph. resurf. various streets. Plans deposit $25; adv. ENR 5/24. CD 10/2/45.

Ala., Huntsville—B.A. 6/1—City, pave 16 streets. CD 2/1/46.

† **Ga., Albany**—AIRPORT IMPRVS.—B.A. 6/1—U. S. Eng., P. O. Box 889, Savannah, navigational aids incl. 45 kva power plant, conc. fdns. for 2 bldgs., Turner Air Force Base. Plans deposit $10.

† **Ga., Savannah**—CRASH FIRE STATION—B.A. 6/5—U. S. Eng., P.O. Box 889, Savannah, Ga., crash fire station at Hunter Air Force Base, near here. Plans deposit $10.

† **La., Lake Charles**—BARRACKS, etc.—B.A. 6/5—U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., 12 standard type barracks, 2 story, 500-man mess hall; base communications bldg., fire station, addnl. new facilities, at Lake Charles Air Force Base, Eng. 41-243-51-47. Bids 3/27 postponed. CD 4/14.

† **S. C., Charleston**—B.A. 6/5—Dpt. Navy, Officer in Charge of Construction, P.O. Box 365, Naval Base, rehabilitation and installing new modified sizes of steamlines at Charleston Naval Shipyard, NOY 24417, Spec. 26672. Plans deposit $10.

† **Louisiana**—B.A. 6/7—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, 2,100,000 cu. yd. channel excav., Mermentau River. CD 6/26/46.

BIDS ASKED—BUILDING

▲ **Va., Charlottesville**—CENTRAL HEATING SYSTEM—B.A. 5/29—At office Colgate W. Darden, pres., University of Virginia, Charlottesville, central heating sys., extens. for Medical School addn. at University

of Virginia. $1,000,000. Wiley & Wilson, 517 American Bldg., Richmond, engrs. CD 12/6/49.

▲ **Ga., Albany**—HOUSING—B.A. 5/31—Albany Housing Auth., 716 Society Ave., 125 housing units, Proj. GA 23-3, $1,000,000. Plans deposit $50. CD 5/9.

Ga., Chamblee—WAREHOUSE, etc.—B.A. 5/31—J. I. Case Co., 700 State St., Racine, Wis., warehouse and office, $600,000. CD 11/15/50.

Miss., Biloxi—HOUSING—B.A. 6/4—Biloxi Housing Auth., Biloxi, 49 housing units, Proj. Miss. 5/6, $375,000, Matthes & Landry, 214 W. Pine St., Hattiesburg, archts. CD 12/2/49.

LOW BIDDERS—HEAVY CONSTRUCTION

State Hy. Dpt., Montgomery, Ala. rejected bids, Apr. 28, bridge, approaches 0.738 mi. U. S. 82 near Gordo, F-127 (7), Pickens Co., L. B. $64,272.; bridge 0.059 mi. over Locust Fork of Arrior River between Brooksville and Ala. 32, FA-S-399 (4), Blount Co., L. B. $71,680, ALABAMA. CD 4/30 under LB.

LOW BIDDERS—BUILDINGS

▲ **W. A. McWaters,** 2 Clayton St., Montgomery, Ala. Low Bidder. $1,302,770. 145 HOUSING units, DECATUR, ALA. Decatur Housing Auth., Decatur, Ga. Bids May 8. CD 4/17.

CONTRACTS—HEAVY CONSTRUCTION

Barrus Constr. Co., Kinston, N. C., Contract Awarded. $520,168, 140,000 sq. yd. asph. paving, curb and gutter, GOLDSBORO, N. C. City, Goldsboro, N. C. Bids May 3. CD 4/26.

▲† **Dickerson, Inc.,** Monroe, N. C. Contract Awarded, $1,637,132. exten. runways, taxiways and parking aprons at Donaldson Air Force Base, GREENVILLE, S. C. U. S. Eng., 33 Custom House, Charleston, S. C. Bids Apr. 16, awarded May 8. CD 4/20, under LB.

Bahin & Hornbuckle, College Park, Ga. Contract Awarded. $82,898. sanitary sewer improvs., ROCKMART, GA. City, Rockmart, Ga. Bids May 8. CD 4/18.

Rust Engineering Co., Exchange Bldg., Birmingham, Ala. Contract Awarded. $879,000. Bressemer Sewage Treatment Plant, BIRMINGHAM, ALA. Jefferson Co., Court House, Birmingham, Ala. CD 4/30, under LB.

Bernard & Byrd, Inc., 1751 Conception St. Rd., Prichard, Ala. Contract Awarded. addnl. storm sewers, MOBILE, ALA. City, Mobile, Ala.

Delta Paving Co., 4100 Northview Dr., Jackson, Miss., Contract Awarded, $87,823, est. $95,000, base, double bit. surf. tr. 5.136 mi. Miss. Hy. 18 between Bay Springs and Rose Hill, F. A. Secondary Proj. S 235 (3), Jasper Co.***Newsom Bros.,** Columbia, Miss., $100,100, est. $95,000, grading, culverts, bridges, double bit. surf. tr. 0.656 mi. U.S. Hy. 80 between Pelahatchie and Brandon, F. A. Proj. F 004-1 (1), Rankin Co.***Paul Anthony,** Tupelo, Miss. $115,851, grading, culverts, bridges 2.296 mi. U.S. Hy. 80 between Philadelphia and Arlington, F. A. Secondary Proj. S 535-1 (1), Neshoba Co., MISSISSIPPI. State Hy. Comn., Jackson, Miss. Bids May 8. CD 4/30.

CONTRACTS—BUILDINGS

Knox Corp., Abbeville, S. C. Owner Builds. $500,000. 75 HOMES, ABBEVILLE, S. C.

▲ **J. A. Jones Constr. Co.,** 133 Ellis St. N. E., Atlanta, Ga. Contract Awarded. $8,653,500. Carver Homes, 990 HOUSING units, ATLANTA, GA. Atlanta Housing Auth., Trust Co. of Georgia Bldg., Atlanta, Ga. Awarded May 9. CD 5/10 under LB.

▲ **Knox Corp.,** Thomson, Ga. Owner Builds. $4,000,000. 500 HOMES addn. to Fleming Heights subdivision, AUGUSTA, GA.

Knox Corp., Thomson, Ga. Owner Builds. $600,000. 75 HOMES, THOMSON, GA.

Charles Day, Valdosta, Ga. Owner Builds. $100,000. tobacco WAREHOUSE, VALDOSTA, GA.

Knox Corp., Thomson, Ga. Owner Builds. $325,000. 40 HOMES, WAYNESBORO, GA.

D. O. Foshee, 1313 Mary St., Jacksonville, 7, Fla., Contract Awarded, $100,000, 300,000 sq. ft., concrete WAREHOUSE St. Johns River in East JACKSONVILLE, FLA. Commodores Point Terminal Co., 1010 E. Adams St., Jacksonville, Fla. Awarded May 4.

E. C. Kenyon Co., 4276 Veronal Ave., Jacksonville 7, Fla. Contract Awarded. $310,799. Douglas Anderson SCHOOL addns., San Diego Rd. in South Jacksonville, JACKSONVILLE, FLA. Duval Co. Bd. Pub. Instruction, 605 Ocean St., Jacksonville, Fla. Awarded May 8. CD 5/1.

▲ **Perrillit-Rickey Constr. Co.,** Box 7072, New Orleans, La. Contract Awarded. $1,295,000. DORMITORY, MOBILE, ALA. Spring Hill College, Spring Hill, Ala. CD 4/26, under LB.

Spinks Constr. Co., Thomasville, Ala. Contract Awarded. $100,000. PLANT addn., THOMASVILLE, ALA. Thomasville Shirt Co., Thomasville, Ala.

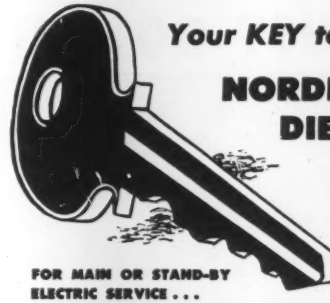
MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Mich., Detroit—B.A. 5/29—City, Carl D. Warner, comr. Pub. Wks., Contr. PW 1423, concrete walks, steel work E. Grand Blvd. Viaduct. George R. Thompson, city engr. CD 4/11.

BIDS ASKED—BUILDINGS

Ill., Morton Grove—PLANT—Bids Asked—Dole Valve Co., 1901 W. Carroll Ave., Chicago, first unit, 100,000 sq. ft. plant at Oakton and Lehigh Aves. $800,000. Sessions Eng. Co., 1 N. LaSalle St., Chicago, Zone 2, engr.



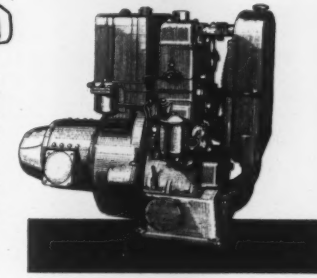
Your KEY to Low Cost Power . . .

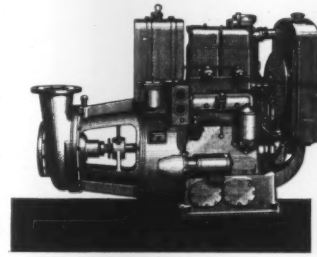
NORDBERG *"Packaged"* DIESEL UNITS

10 to 30 horsepower
6 to 20 kilowatts

FOR MAIN OR STAND-BY ELECTRIC SERVICE . . .

Nordberg type 4FS Diesel Generator Sets are built in 1 and 2-cylinder sizes, generating from 6 to 20 kilowatts. These sturdy, reliable units are ideal for providing electricity for lighting, for electric power tools, for powering crane magnets . . . and for stand-by protection against power failure when storms, accidents or other causes cut off other types of power supply. Proved in service—backed by over 35 years of Diesel engine experience.



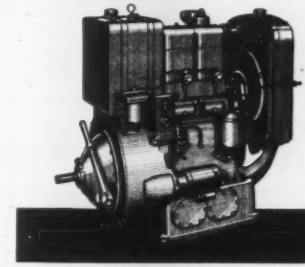


FOR PUMPING . . .

Nordberg 1 and 2-cylinder Diesel Pumping Units combine low cost, reliable Diesel power with efficient, dependable centrifugal pumps for practically all construction job pumping requirements. Users report saving up to $100.00 a month over gasoline powered pumps. Available in pump capacities from 200 to 2600 gallons per minute at 20 to 220 ft. head.

FOR DIRECT POWER DRIVE . . .

Nordberg 1 and 2-cylinder Diesel Power Units offer from 10 to 30 horsepower for a wide range of straight power requirements including replacement power units. Models available for direct drive with clutch or stub shaft power take-off. Operating speeds from 1200 to 1800 rpm.



CLIP AND MAIL THIS COUPON FOR ACTION . . .

NORDBERG MFG. CO.
Milwaukee 7, Wis.

Nordberg Mfg. Co., Milwaukee 7, Wis.

Send catalog covering both 1 and 2-cylinder Nordberg Diesels. I am interested in a unit for the following service:

Your Name _____

Company Name _____

Address _____

City _____ Zone _____ State _____

4FS 451

MUSCH SULZER NORDBERG

Builders of America's Largest Line of Heavy Duty Diesels—10 to 9600 hp.

THE JOB MUST GO ON!

MARLOW pumps help Bechtel Corporation cross difficult swamplands

This natural gas pipeline is being constructed between the Texas Gulf Coast and Joliet, Illinois, across all kinds of terrain. At one of the worst spots — this swampy stretch at Newport, Arkansas — the contractor had to put weights on the pipe to sink it below the mud. And under conditions as tough as they come, the Marlow pump shown, a Model 641 Self-Priming Centrifugal, stays on the job and helps construction move ahead smoothly.

This job furnishes another example of Marlow stamina and dependability. **REMEMBER!** Marlow pumps have been helping contractors solve difficult pumping problems for over a quarter of a century. Let Marlow pumps help you cut costs and safeguard **your** profits.

Write for information and name of nearest dealer

MARLOW PUMPS 510 GREENWOOD AVE. RIDGEWOOD, N. J.

Manufacturers of the World's Most Complete Line of Construction Pumps

Diamond Core

Drilling

CORE BORINGS for Foundations, Dams, Bridges and all Heavy Structures GROUT HOLES

Tinney Drilling Co.
Grafton, W. Va.

"GUNITE"

NEW CONSTRUCTION AND REPAIRS

- Prestressed Tanks
- Repair all Types Disintegrated Concrete
- Dam Reconstruction and Repairs
- Linings and Repairs to Reservoirs, Stacks, Bunkers, Sewers, Tanks, Tunnels, Pen Stocks
- Structural Steel Encasements
- Restoration of Masonry Structures

Nationwide Operations—Experienced Personnel

Write for our new 48 page Bulletin

PRESSURE CONCRETE CO.
"Gunite" Contractors and Engineers
193 Emmett Street, Newark 5, New Jersey — So. Court Street, Florence, Alabama
33 N. LaSalle St., Chicago 2, Ill.
Liberty Life Bldg., Charlotte, North Carolina

SOON LETS CONTRACT—BUILDINGS

Ill., Chicago—LABORATORY—Armour Research Foundation, 35 W. 33 St., Zone 15, soon lets contract 2 story, bsmnt., 60,000 sq. ft. laboratory. $500,000. Friedman Alschuler & Sincere, 223 Jackson St., Zone 6, archts. CD 4/27.

▲ **Ill., Effingham**—HOSPITAL—Hospital Sisters of the Third Order of St. Francis, Sangamon Ave. Rd., Springfield, soon lets contract, 6 story, part bsmnt., rein.-conc., brick St. Anthony's Memorial Hospital, $2,000,000. Extended date. Henry R. Slaby, 2750 N. Teutonia Ave., Milwaukee, Wis., archt. CD 4/26.

▲ **Ill., Morton Grove**—OFFICE and FACTORY—Crane Packing Co., 1800 Cuyler Ave., Chicago, soon lets contract 40,000 sq. ft. office, 65,000 sq. ft. factory, $1,000,000. Olsen & Urbain, 5 S. Wabash St., Chicago, Zone 3, archts.

O., Mt. Vernon—HOME FOR AGED—Order of Eastern Stars, Ohio Grand Chapter, c/o Lucille Schnelli, Huron, soon lets contract (1) home for aged (2) administration bldg. (3) dining room and kitchen bldg. (4) boiler house (5) laundry and garage, 24 cottages, near here. $900,000 W. S. Ferguson & Arnold A. Peterson, 1910 E. 26 St., Cleveland, engrs. and archts. CD 11/10.

Wis., Milwaukee—POWER PLANT DREDGING—Wisconsin Electric Power Co., 231 W. Michigan St., Zone 3, soon lets contract dredging and dock for power plant. E. J. Archambault, c/o owner, engr. CD 11/22.

LOW BIDDERS—HEAVY CONSTRUCTION

American Asphalt & Paving Co., 12 N. LaSalle St., Chicago 3, Ill., Low Bidder, $223,226. resurf. streets south sect.; **Union Contg. & Engineering Co.**, 30 N. LaSalle St., Chicago 2, Ill., $247,336, resurf. streets, CHICAGO, ILL. City, City Hall, Chicago 2, Ill. Bids May 7. CD 5/2.

H. Turner & Son, Boscobel, Wis. Low Bidder, $69,510, Boyd Bridge and approaches, 0.123 mi. The Lancaster-Platteville Rd., C.T. Hy. A, Proj. S 0574 (3), Grant Co.; **Edward Kraemer & Sons**, Plain, Wis., $61,100, Louthain Bridge and approaches, Cont., 1. 0.199 mi. The Rockville-Platteville Rd.; Proj. S 0205 (2), Grant Co. WISCONSIN. State Hy. Comn., Madison, Wis. Bids May 8. CD 4/23.

▲ **Schultz-Thronson and Rein & Dahl**, 119 E. Washington Ave., Madison, Wis., Low Bidder, $600,430, grading, drain, base course 4.944 mi. The Waukesha County-line-S.T.H. 60 Road, U.S. Hy. 41, Proj. F 03-1 (28), Washington Co.; $570,823, Option B, Contrs. 1 and 2, grading, draining, base course 3.385 mi. U.S. H. 41 West Bend and Waukesha Co. line, S.T.H. 60 Road, U.S. Hy. 45 and 41, Projs. F 027-1 (10) and F 03-1(28), Washington Co.***O'Keefe Constr. Co., De Pere, Wis., $1,097,906, Option C, (Combination of Options A and B) Contrs. 1 and 2, grading, draining, base course 8.329 mi. The U.S. H. 41-West Bend and Waukesha County Line S.T.H. 60 Road, U.S. Hy. 45 and 41, Projs. F 027-1 (10) and F 03-1 (28), Washington Co.

Arthur J. Pagel, Almond, Wis., $159,415, grading, draining 13.744 mi. The Montello-North County Line Road, S.T. Hy. 22, Proj. S 0272 (1), Marquette Co.***Fletcher Constr. Co., Menomonie, Wis., $143,489, grading, draining, Contr. 1, 4.659 mi. S.T. Hy. 121, The Independence-Whitehall Rd. Proj. S 0180 (3), Trempealeau Co.***Joseph D. Bonness, Inc., 1409 N. 27 St., Milwaukee, Wis., $474,764, c. conc. 1.011 mi. The Howell Ave. (Grange Avenue-Layton Ave. Sect.) S.T. Hy. 38, Proj. T 0834 (2), Milwaukee Co.***L. G. Arnold, Inc., Box 228, Eau Claire, Wis., $396,038, c. conc. 4.604 mi. The Onalaska-Holmen Rd. U.S. Hy. 53, Proj. F 08-3 (17), LaCrosse Co.

Arrow Petroleum Co., Forest Park, Ill., $338,709, b. conc. 6.962 mi. The Beaver Dam-S.T.H. 26 Road, S.T. Hy. 33, Proj. T 029-1(1), Dodge Co.***Rein & Schultz, 119 E. Washington Ave., Madison, Wis., $418,318, b. conc. 9.905 mi. The Cambridge-South County Line (Sect. 1) Road, U.S. Hy. 12, Proj. T 04-1 (2), Jefferson Co.; $229,607, b. conc. pavement 6.242 mi. The Cambridge-South County Line (Sect. 2) Road, U.S. Hy. 12, Proj. T 04-1 (8), Jefferson Co.***Payne & Dolan of Wisconsin, 735 N. Water St., Milwaukee, Wis., $69,924, b. conc. 2.3 mi. Contr. 1, S.T. Hy. 15, The Waukesha County line-West Allis Rd. Proj. T 015-2 (5), Milwaukee Co., WISCONSIN. State Hy. Comn., Madison, Wis. Bids May 8. CD 4/23.

CONTRACTS—HEAVY CONSTRUCTION

Southwestern Bell Telephone Co., 1010 Pine St., St. Louis 1, Mo. Own Forces. $400,000. exten. imprv. telephone service from Belleville to Scott Air Force Base, and in Belleville, ILLINOIS.

Highway Powers, 1409 N. 27 St., Milwaukee 8, Wis., Contract Awarded, $74,480. paving N. Downer Ave. ***Schneider-Borchert Co., 606 W. Wisconsin Ave., Milwaukee 3, Wis., $69,920, paving W. State St.*** Roddie E. Beaudoin & Son, 1518 N. 37 St., Milwaukee 8, Wis., $68,640, paving N. 86 St., MILWAUKEE, WIS. City, Milwaukee, Wis. Grand total $213,040. Bids May 4, awarded May 8.

Dunigan Bros., Bryan, O. Contract Awarded. $69,907. water mains, CONCORD, MICH. Concord Village, Concord, Mich. Bids Apr. 25. CD 4/18.

CONTRACTS—BUILDINGS

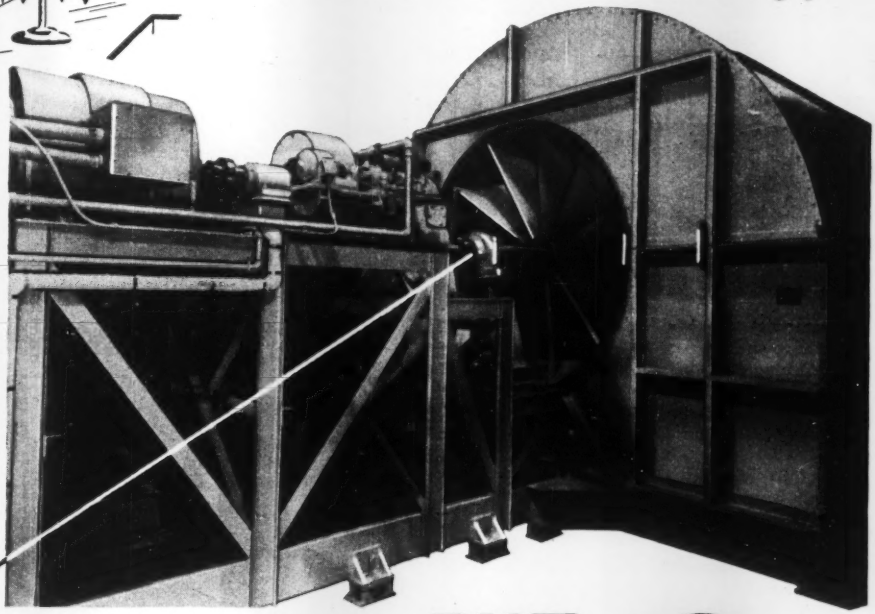
▲ **Heller-Murray Co.**, 222 W. Rayen Ave., Youngstown, O., Contract Awarded. Approx. $4,000,000-$5,000,-000. FACTORY expansion for chemical production, BARBERTON, O. Southern Alkali Co., Columbia Ct., Barberton, O.

Roy C. Clark, 804 E. Chicago St., East Chicago, Ill. Contract Awarded. $125,000. PLANT and OFFICE

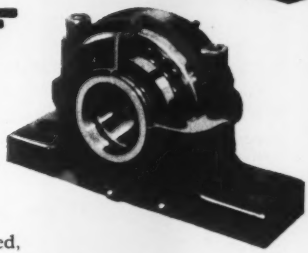
(Continued on page 97)

CUSTOMERS KEEP COOLER AT KAUFMANN'S

with mammoth air-conditioning fans



pillow blocks engineered by **SKF**



One of the country's finest department stores, Kaufmann's in Pittsburgh recently installed two mammoth air-conditioning fans. Built by Buffalo Forge Company, these two fans are each as big as a two-story house and deliver approximately 500,000 cu. ft. of air per minute. Only one blower and one exhaust fan serve the entire system which conditions the air from the second story through to the thirteenth. These giant fans are equipped with SKF Pillow Blocks. Self-aligning, long-lived, requiring infrequent lubrication and inspection, SKF is specified for most major tunnel fan installations, as well as for many interior air-conditioning systems.* 7176

*For detailed information on ventilating and air-conditioning fans built by Buffalo Forge Company, write P. O. Box 985, Buffalo 5, N. Y.

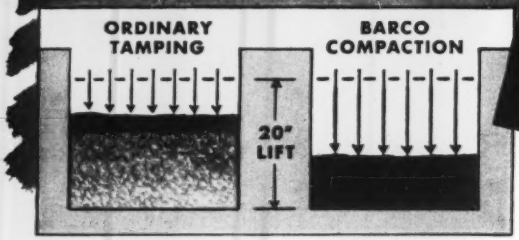
8 REASONS WHY SKF IS PREFERRED BY ALL INDUSTRY

integrity
craftsmanship
metallurgy
tolerance control
surface finish
product uniformity
engineering service
field service

SKF

SKF INDUSTRIES, INC., Phila. 32, Pa.
manufacturers of
SKF *and* HESS-BRIGHT *bearings*

FASTER! BETTER!
SOIL COMPACTION



Here's Why

ONLY the BARCO RAMMER can produce specified compaction on lifts up to 20 inches*. This is due to the "one-two punch" of the Rammer. The Rammer jumps about 14 inches in normal operation. It drops with the weight of about 200 lbs. Immediately after the impact, the operator trips the handle causing the Rammer to jump into the air again. This gives a follow-through, or thrusting effect, to the original impact. This double impact differs from the "quick pat" of other tamping devices which tend to produce compaction only on the surface of the fill.

The Barco Rammer is a completely self-contained unit; no auxiliary or extra equipment is required. With a Barco Rammer one man can do the work of five! Ask for the nearest Barco Distributor to give you a demonstration. *Catalog and information on request.* BARCO MANUFACTURING COMPANY, 1814 F Winnemac Ave., Chicago 40, Illinois. In Canada: The Holden Co., Ltd., Montreal.

***With lifts from 12" to 20" and averaging two passes, up to 24 cubic yards can be compacted per hour.**

for soil compaction close to walls, culverts, and abutments —in trenches, ditches

BARCO
"Pegson" Gasoline
RAMMER

Distributors Located in All Principal Cities

FREE ENTERPRISE... THE CORNERSTONE OF AMERICAN PROSPERITY

(Continued from page 94)

addn., EAST CHICAGO, IND. Combustion Engineering Co., 425 151 St., East Chicago, Ind. Awarded Apr. 30.

Good Homes, Inc., 1025 Circle Tower, Indianapolis, 5, Ind., Owner Builds. **$400,000.** 50 Gunnison HOMES in Indianapolis; **$310,000,** 35 Gunnison HOMES in Brownsburg, INDIANAPOLIS, IND. Edward Grafton, c/o owner, archt.

▲ **Minton Assoc.,** Circle Tower, Indianapolis 5, Ind. Owner Builds. **$2,500,000.** 102 HOMES in Benham Pl. on Kessler Blvd., INDIANAPOLIS, IND. Bruce & Zeager, Circle Tower, Indianapolis 5, Ind., engrs. and archts.

▲† **Tonn & Blank, Inc.,** 104 N. Franklin St., Michigan City, Ind. Contract Awarded. **$2,500,000.** Second sect. PLANTS, KINGSBURY, IND. Defense Dpt., Kingsbury Ordnance Plant, Kingsbury, Ind. Awarded May 4.

▲ **A. Bentley & Son,** 201 Belmont St., Toledo, O., Contract Awarded, **$6,000,000,** erecting 3 PLANT bldgs., MARION, IND. Dana Corp., 4100 Bennet St., Toledo, O. CD 5/1.

Schlimoeller & Kroft Co., Inc., 3959 Lincoln Ave., Chicago 18, Ill. Contract Awarded. **$82,000.** 1 story FACTORY addn., CHICAGO, ILL. Skokie Tool & Mfg. Co., 2930 N. Campbell St., Chicago, Ill. Robt. P. Johnstone, 1033 S. Boulevard, Oak Park, Ill., archt. Awarded May 2.

E. N. Kelley Co., 104 N. Oak Park Ave., Oak Park, Ill. Contract Awarded. **$85,000.** 8,500 sq. ft. FACTORY, 4153 Butterfield Rd., HILLSIDE, ILL. Chicago Mold Engineering Co., 136 S. North Ave., Hillside, Ill. Awarded Apr. 30. CD 3/27.

Prudential Realty Co., 3520 W. Devon St., Lincolnwood, Ill. Own Forces. **$400,000.** 20 RESIDENCES, LINCOLNWOOD, ILL. Awarded May 1.

▲ **Ragnar Benson Co.,** 4744 W. Rice St., Chicago 51, Ill. Contract Awarded. **$1,200,000.** 120,000 sq. ft. PLANT east and west wings addn., incl. parking area, LINCOLNWOOD, ILL. Bell & Howell, 7100 McCormick Blvd., Lincoln Wood, Ill. Victor L. Charn, 4744 W. Rice St., Chicago 51, Ill., archt. Awarded May 4.

L. G. Arnold, Inc., 201 N. Dewey St., Eau Claire, Wis. Contract Awarded. **$591,268.** 60 unit HOUSING Proj. Wis. 4-1, MENOMONIE, WIS. Menomonie Housing Auth., Menomonie, Wis. Bids May 2. CD 4/12.

Klug & Smith Co., 4425 W. Mitchell St., West Allis, Wis. Contract Awarded. 1 story, 91x135 ft., steel, concrete pattern SHOP, MILWAUKEE, WIS. Universal-Rundle Mfg. Corp., 3305 W. Forest Home Ave., Milwaukee, Wis.

▲ **Walter W. Oeflein, Inc.,** 5345 N. Hopkins St., Milwaukee 9, Wis. Contract Awarded. Total est. **$1,000,000** concrete fdn. for 1 story, 200x506 & 200x280 ft., steel, brick, blocks FACTORY, MILWAUKEE, WIS. National Container Corp., 3410 W. Hopkins St., Milwaukee, 9, Wis. Lefebvre & Wiggins, 3415 N. Green Bay Ave., Milwaukee 12, Wis., archts.

Albert Salen Constr. Co., Marquette, Mich. Contract Awarded. **$300,000.** brick, steel HOSPITAL addn., alterations, MENOMINEE, MICH. St. Joseph Hospital, Menominee, Mich. Bids Mar. 28. CD 3/9.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Nebraska**—B.A. 6/12—Bureau Reclamation, Dpt. Interior, Bldg 1-A, Denver Federal Center, Denver, Colo., furnishing 3-motor operated radial-gate hoists and one lot wire rope, sheaves, sheave supports and accessories, Frenchman-Cambridge unit, Missouri River Basin Proj., Inv. No. DS-3420., adv. ENR 5/24.

† **Nebraska**—B.A. 6/13—Bureau Reclamation, Dpt. Interior, Superior, earthwork, structures for laterals 1.7, 2.4, 4.3, 6.3, 9.2, 9.6, 10.4, 12.6 and 13.9, sublaterals and drains, Courtland lateral system, Bostwick Div., Missouri River Basin Proj., Spec. No. DC-3425., adv. ENR 5/24.

† **Missouri**—B.A. 6/14—U. S. Eng., P. O. Box 97, Memphis 1, Tenn., 800,000 cu. yd. Levee Item R-895.5, New Madrid, Levee Sta. 35 plus 0 35 plus 42, 170,000 cu. yd. ditch excav. along right bank of Mississippi River, New Madrid Co., at lower end Birds Point-New Madrid setback levee extending westerly approx. ¾ mi. to jct. with St. Johns levee, adjacent to New Madrid, CIVENG 40-041-51-140. CD 6/1/44.

Tex., Fort Worth—B.A. 6/21—City, WW filter plant. Approx. $100,000. Freese & Nichols, 407 Danciger Bldg., engrs. CD 4/24, under LB.

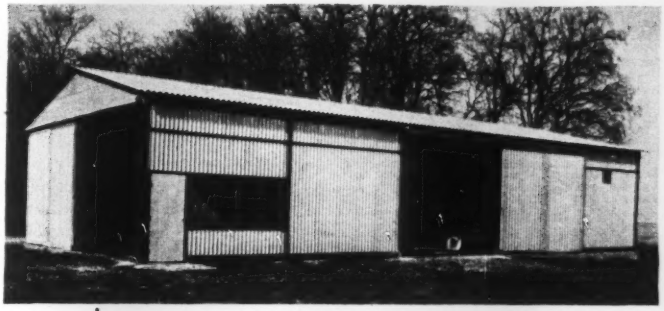
BIDS ASKED—BUILDINGS

Mo., Ladue (St. Louis 24, P. O.)—SCHOOL—B.A. 6/5—Bd. Educ., Ladue School Dist., Joel Y. Lund, pres., Dr. Ivan C. Nicholas, supt., 9060 Ladue Rd., rein.-con. brick, stone secondary high school, Warson Rd. between Conway and Daniel Boone Parkway, Wm. B. Ittner, Inc., 408 Bd. Educ. Bldg., 911 Locust St., St. Louis, Zone 1, archt. CD 10/27.

LOW BIDDERS—HEAVY CONSTRUCTION

Pennington Winter Co., Apco Tower, Oklahoma City, Okla. Low Bidder. **$907,853,** est. $554,000, sanitary sewer sub mains in various locations, OKLAHOMA CITY, OKLA. City, City Hall, Oklahoma City, Okla. Bids May 8. CD 4/26.

▲† **Del E. Webb,** Box 2056, Amarillo, Tex. Low Bidder. **$6,600,000.** addnl. airmens dormitories, Facilities "A", Inv. No. Eng. 34-066-51-30, AMARILLO, TEX. U. S. Eng., Box 61, Tulsa 2, Okla. Bids May 8.



ESSENTIAL PRODUCTION AND STORAGE BUILDINGS AVAILABLE

Certainly! Essential production and storage uses will warrant a USF All-Steel Utility Building! They erect with minimum manhours . . . multiple span widths that link at eaves . . . two head heights . . . multiple lengths to any dimension. Use as permanent structures . . . dismantle without salvage loss and move at will. Worth investigating!

FOR
• LIGHT MANUFACTURE • WAREHOUSES
• PLANT OFFICES • SUB-STATIONS
• CREW SHELTERS, ETC.

USF *Portable . . . Permanent*
STEEL UTILITY BUILDINGS

MANUFACTURERS OF
• Hollow Metal Doors and Frames • Prefabricated Metal Buildings • Corrugated Metal Window Wells • Highway Guard Rail • Corrugated Metal Pipe • Structural Plate Bridge Flooring

USF UNITED STEEL FABRICATORS, INC.
WOOSTER, OHIO

Hoffman & Borders, Box 2096, Waco, Tex. Low Bidder, $61,600. Contr. A, water supply, MT. VERNON, TEX. City, Mt. Vernon, Tex. Bids May 3. CD 4/13.

City, Mt. Vernon, Tex., received no bids May 3, sanitary sewers, MT. VERNON, TEX. CD 4/13.

Gerald Mora, 312 Sabine St., Houston, Tex. Low Bidder, $104,270. addnl. natural gas transmission and distr. lines, NIXON, TEX. City, Nixon, Tex. Bids May 7. CD 4/24.

† **Sturgeon Electric Co.**, 2124 Broadway, Denver, Colo. Low Bidder. $84,872. constr. Sinclair-Hanna 34.5 kv transmission line consisting of 25.8 mi. of Hanna-Ft. Steele sect.; 0.6 mi. of Sinclair-Ft. Steele, Sect. A, 1.5 mi. Semionoe-Rawlins to Sinclair tie line, Kendrick Proj. Spec. DC 338C, WYOMING. Bureau Reclamation, Dpt., Interior, Casper, Wyo. Bids May 3. CD 4/10.

† **C. E. Nelson**, Logan, Utah. Low Bidder. $259,644. surf. bit. surf., 12.248 mi. Yellowstone Trail Hy., Proj. G-J5, K4, Mineral Co., MONTANA. Pub. Rds. Admin., Commerce Dpt., Post Office Bldg., Missoula, Mont. Bids May 8. K. S. Chamberlain, dist. engr.

McMillion & Pascal, 3050 S. Huron St., Englewood, Colo., Low Bidder, $113,197, est. $576,224, sewerage sys. expansion. COLORADO SPRINGS, COLO. City, City Hall, Colorado Springs, Colo. Bids May 7. Black & Veatch, 4706 Broadway, Kansas City, Mo. engrs.

LOW BIDDERS—BUILDINGS

▲ **Knutson Constr. Co.**, 2233 Commerce Bldg., Dallas, Tex. Low Bidder. $1,225,700, est. $1,200,000. 150 DWELLING units for total 25 two story bldgs., rein.-con. footings and grade beam and slab fdn., brick veneer, cement asb. siding, BEAUMONT, TEX. Beaumont Housing Auth., Beaumont, Tex. Bids May 9. CD 5/22.

Dodds & Wedegartner, Inc., 5½ mi. East of 14 St., Brownsville, Tex. Low Bidder. $189,400, general constr. POWER PLANT; $214,651, installing complete electrical sys., and power plant wiring, BROWNSVILLE, TEX. City, Brownsville, Tex. Bids May 7. CD 4/9.

▲ **Paschall-Sanders Constr. Co.**, 3602 Linden St., Fort Worth, Tex. Low Bidder. $2,286,140. 300 unit HOUSING Project Tex. 21-3, BROWNWOOD, TEX. Brownwood Housing Auth., Brownwood, Tex. Bids May 10. Mount & Doyle, Brownwood, Tex., assoc. archts. CD 5/2.

▲ **Crawford Constr. Co.**, 203 N. 16 St., McAllen, Tex. Low Bidder. $1,124,159, est. $1,110,000. 140 HOUSING units for total 51 one and 2 story bldgs., concrete slabe fdn., brick, haydite cavity exterior walls, etc. Tex. 28-2, McALLEN, TEX. McAllen Housing Auth., McAllen, Tex. Bids May 10. CD 4/20.

▲ **T. C. Bateson Constr. Co.**, 618 Irwin-Keasler Bldg., Dallas, Tex. Low Bidder. $1,023,000, est. $800,000. 3 story, 75,000 sq. ft. brick, AUDITORIUM, FINE ARTS BLDG., air-conditioning, NACOGDOCHES, TEX. Stephen F. Austin State Teachers College, Nacogdoches, Tex. Bids May 9. Shirley Simons & Sons, Broadway at 6th St., Tyler, Tex., archts.

CONTRACTS—HEAVY CONSTRUCTION

J. Mirau, Deerwood, Minn. and **H. M. Jones**, Little Falls, Minn. Contract Awarded. $81,142. base, grav. road-mixed bit. surf. 11.3 mi., WADENA, MINN. Wadena Co., C. Stedman, aud., Wadena, Minn. Bids May 3. CD 4/11.

▲ **Koss Constr. Co.**; Pauline, Kan. Contract Awarded. $739,579. c. conc. 12.961 mi., Proj. 25-75 F 078-5 (1), Pottawatomie Co.***Perry McGlone Constr. Co.**, 609 Grand Ave. Bank Bldg., Kansas City, Mo., $350,-513, c. conc. 5.082 mi. Proj. 505-96 FI 02 2 (4), Lyon Co.***Concrete Materials & Constr. Co.**, 405 Granby Bldg., Cedar Rapids, Ia., $117,913. base course 6.396 mi. Proj. 54-6 F 038-5 (2), Part I, Bourbon Co.***Independent Constr. Co.** Overland Park, Kan. $88,773, sheet asph. surf. course 6.396 mi. Proj. 54-6 F 038-5 (2), Bourbon Co., KANSAS. State Hy. Comn., Fort Scott, Kan. Grand total $1,296,778. Bids May 4. Cd 4/20.

City, Marshall, Tex., Purchase and Hire. Approx. $80,000. c.i. pipe lines, MARSHALL, TEX. J. E. Albright, city engr. CD 8/6/48.

East Texas Baptist College, Marshall, Tex. Own Forces. $55,000. c.i. water lines unit, MARSHALL, TEX.

City, Marshall, Tex., Purchase and Hire. Approx. $70,000, sanitary sewer lines, MARSHALL, TEX. Bids Apr. 12. CD 3/20.

East Texas Baptist College, Marshall, Tex. Own Forces. $110,000. asph. type paving unit for campus and streets, MARSHALL, TEX. CD 9/21.

City, Sulphur Springs, Tex. Purchase and Hire. $40,000. portion water earthen storage lake, SULPHUR SPRINGS, TEX. City, Sulphur Springs, Tex. CD 3/30.

City, Sulphur Springs, Tex. Purchase and Hire. $60,000, sanitary sewer line unit, SULPHUR SPRINGS, TEX. City, Sulphur Springs, Tex. CD 3/30.

† **Nelco Products**, Hollydale, Calif. Contract Awarded. $34,250. spiral and incline stairs for galleries, Hungry Horse Dam, Hungry Horse, Proj. Spec. DS 3345, MONTANA. Bureau Reclamaiton, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Apr. 10. CD 3/16. Awarded May 7.

CONTRACTS—BUILDINGS

Gerhardt Constr. Co., Cape Girardeau, Mo. Contract Awarded. $515,433. general constr. Unit 1, 1 and 2 story, 57x244 ft., 59x93 ft., brick, SCHOOL, CAPE GIRARDEAU, MO. School Dist., Elizabeth Walter, secy., Cape Girardeau, Mo. Bids May 8. CD 4/25.

Roy Scheperle Constr. Co., 525 Madison St., Jefferson City, Mo. Contract Awarded. $343,000. 1 story, bsmnt., 54x94 ft., brick, concrete SCHOOL addn., alterations, 1 story, bsmnt., 94x110 ft. GYMNASIUM, LAKE OZARK, MO. Consolidated School Dist. 1, Miller Co., Bd. Educ., Lake Ozark, Mo. Bids May 4. Bonsack & Pearce, Inc., 308 N. 6 St., St. Louis 1, Mo., archt.

N. F. English Constr. Co., Hutchinson, Kan. Contract Awarded. county HOSPITAL, PHILLIPSBURG, Kan. Phillips Co., Phillipsburg, Kan. CD 4/13.

Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex., and **Wigton Abbott Corp.**, 1225 South Ave., Plainfield, N. J. Contract Awarded. $375,000, 40,-000 sq. ft. OFFICE; Approx. $75,000, 50-acre site development, grading, open drainage, earthwork; $65,-500, sewerage sys.; Approx. $45,000, water supply sys., 11 mi. northeast of FORT WORTH, TEX. Bell Aircraft Corp., c/o H. Gaylord vice pres., Hy. 183, Fort Worth, Tex. Grand total $560,500. CD 4/22.

Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex. Contract Awarded, Approx. $965,000. 6 story, bsmnt. OFFICE, HOUSTON, TEX. Main & Rusk Realty Co., M & M Bldg., Houston, Tex. CD 5/14.

▲ **City Public Service Bd.**, 201 N. St. Marys St., San Antonio, Tex. Owner Builds. $6,694,000. furnishing, partially installing 60,000 kw. unit as a 3rd unit, (doubling capacity) to Leon Creek Electric POWER PLANT project, SAN ANTONIO, TEX. CD 10/18.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Oregon**—B.A. 6/1—U.S. Eng., 628 Pittock Block, Portland, Zone 5, bank protection works at various locations along both banks Long Tom River, from Station 10 plus 95 downstream from Fern Ridge Reservoir in Lane Co. to Station 1227 plus 00 near confluence of Long Tom and Willamette Rivers, in Benton Co., Serial No. CIVENG 35-026-51-272.

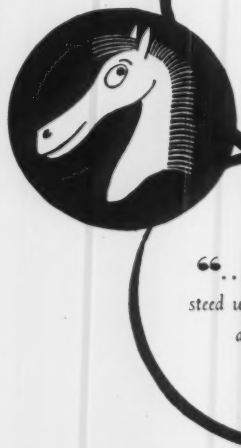
▲† **Wash., Moses Lake**—BARRACKS—B.A. 6/1—U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, 16 frame barracks bldgs. and 2 mess-administration facilities bldgs., rein.-con. constr. at Larson Field, Inv. No. 51-7. $3,400,000. Plans deposit $25. Naramore, Bain, Brady & Johanson, 904 7 Ave., Seattle, archts. CD 3/31.

† **Oregon and Washington** — TRACK REMOVAL — B.A. 6/5—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., remove track 8.1 mi. Union Pacific, CIVENG 45-164-51-59.

† **Oregon**—B.A. 6/7—U. S. Eng. 19 E. Poplar St., Walla Walla, Wash., fishway control equip. for McNary Powerhouse, CIVENG 45-164-51-52.

† **California**—TRANSFORMERS, etc.—B.A. 6/12—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver

(Continued on page 101)



Use Trinity White—the *whitest* white cement. Trinity White is a true portland cement. It meets all Federal and ASTM specifications. Sell Trinity White for architectural concrete units, terrazzo, stucco, paint, ornamental work, tilesetting, etc. When ordering ask for it by its full name *Trinity* White—it's widely advertised to your trade. Trinity Division, General Portland Cement Co., 111 W. Monroe St., Chicago; Republic Bank Bldg., Dallas; 816 W. 5th St., Los Angeles.

Trinity White

PORTLAND CEMENT

EXPERIENCE

CRAFTSMANSHIP

INTEGRITY

Structural Steel

FABRICATION

AND

ERECTION

BY

PITTSBURGH •DES MOINES

Let us quote on your needs!

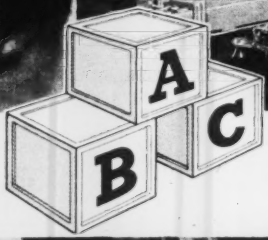
Three complete Pittsburgh-Des Moines fabricating plants—in Pennsylvania, Iowa, and California—each with its own administrative and engineering divisions, assure prompt fulfillment of your steel construction requirements. You can rely upon P-DM experience, skill and responsibility in executing every detail of your contract: write, phone or wire for a consultation on your project.

PITTSBURGH · DES MOINES STEEL CO.

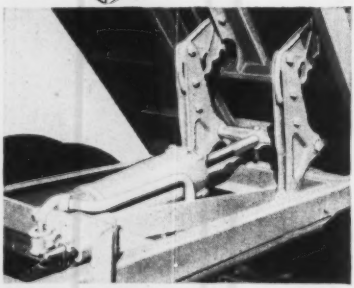
Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

PITTSBURGH (25). . . . . 3414 Neville Island
NEW YORK (7). . . Room 916, 270 Broadway
CHICAGO (3). . 1218 First National Bank Bldg.
SANTA CLARA, CAL. . . . . 621 Alviso Road
DES MOINES (8). . . . . 915 Tuttle Street
DALLAS (1). . . . . 1219 Praetorian Bldg.
SEATTLE . . . . . 922 Lane Street



A WINNING COMBINATION on "TOUGH" JOBS!



There's nothing mysterious or even complicated about HOW and WHY Galion's exclusive Fulcrumatic hoist ACTION develops more load lifting ability and a smoother, steadier dumping cycle than a conventional hoist of equal capacity rating.

. . . It's just a matter of changing the hydraulic pump ability into an upward lifting force so applied through simple linkages, that the pump delivers a uniform effort throughout the dumping cycle. The result is longer hoist, body and chassis life . . . better dumping performance.

It takes the "tough, heavy-going" jobs to bring out the operating ability and construction stamina of dump truck equipment.

. . . And it is on these "tough" jobs where Galion hydraulic hoists and allsteel dump bodies "stand out" . . . for the "tough" ones quickly prove the all around advantages of Galion's famous A B C combination . . . the combination where Galion's exclusive fulcrumatic hoist *ACTION*, unites with perfect lifting *BALANCE* and time-proved quality *CONSTRUCTION*.

That's the winning combination for long economical performance . . . and for lengthening chassis life as well.

Ask your truck dealer for a demonstration on *your job!*

MAKES A WHALE OF A DIFFERENCE THE "WEIGH" IT LIFTS

Sales and Service FROM Coast to Coast

GALION

ALLSTEEL BODY COMPANY
GALION, OHIO

A exclusive hoist *Action*
B perfect operating *Balance*
C proved quality *Construction*

(Continued from page 98)

Federal Center, Denver, Colo., transformers, etc. for Folsom Power Plant, Central Valley Proj., Spec. DS-3399. L. N. McClellan, ch. engr.

▲ **California**—B.A. 6/12—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., 12 vertical-shaft, turbine-type pumping units for Pumping Plants E1 and E2, Laterals 74.6E and 77.3E, Unit 1, Exeter Irrigation Dist. Friant-Kern Canal Distribution systems, Spec. DS-3426, Central Valley Proj.

† **Washington**—B.A. 6/14—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing 3 motor-driven, vertical-shaft, turbine-type pumping units, 25.3 cfs capacity each under total head of 149 ft; 3 motor-driven, horizontal-shaft, centrifugal-type pumping units, 8 cfs capacity each under total head of 97 ft. Columbia Basin Proj. Inv. No. DS-3428; adv. ENR 5/24.

† **Arizona** — B.A. 6/20 — Bureau Reclamation, Davis Dam, architectural finish and misc. metalwork installations for Davis Dam and Power Plant, Davis Dam Proj. Spec. No. DC-3427; adv. ENR 5/24.

BIDS ASKED—BUILDINGS

Ore., Redmond—HOSPITAL—B.A. 6/4—Central Oregon Hospital Assn., Redmond, hospital. $435,000. Gerald G. Scott, Builders Exchange Bldg., Portland, archt. CD 5/1.

Calif., Long Beach—BUILDINGS—B.A. 6/5—State Div. of Architecture, Pub. Wks. Bldg., Sacramento, 19 temporary bldgs., rein.-con. slab, etc. Long Beach State College.

Wash., Kennewick — AUDITORIUM-GYMNASIUM — B.A. 6/7—School Dist. 17, Kennewick, 137x324 ft. rein.-con. auditorium-gymnasium for high school. $600,000. Plans deposit $25. E. W. Morrison, 719 2 Ave., Seattle Zone 4, archt. CD 2/26.

Calif., Riverside—SCHOOL—B.A. 6/19—State Div. Architecture, Pub. Wks. Bldg., Sacramento, 13 bldgs., fencing, swimming pool, roads, walks and related utilities, approx. 156,000 sq. ft. School for the Deaf, Plans deposit $75. Risley & Gould, 2502 West 3rd St., Los Angeles, archts. CD 1/10/49.

▲ **Wash., Kennewick**—HOUSING—B.A. 6/19—Kennewick Housing Auth., 6 Ave. and Auburn St., 125 housing units, management unit, maintenance unit, streets, sewers, water sys., etc. $1,000,000. Plans deposit $25. Bassetti & Morse, 1621 Boren Ave., Seattle, Zone 1, archts. CD 12/1/50.

▲ **Calif., Los Angeles**—MEDICAL CENTER—B.A. 7/3—Bd. Regents of The University of California, 405 Hilgard Ave., medical center, $15,500,000. Extended date. Welton Becket & Assoc., 5657 Wilshire Blvd., Los Angeles, Calif., archts. CD 4/13.

SOON LETS CONTRACT—BUILDINGS

Ore., Hood River—WAREHOUSE—Hood River Apple Growers' Assn., Hood River, soon lets contract 2 story bsmnt. warehouse, utilizing standing walls. Leslie D. Howell, Fitzpatrick Bldg., Portland, engr.

LOW BIDDERS—BUILDINGS

▲† **Trewhitt, Shields & Fisher**, 926 Paralleo Ave., Fresno, Calif. Low Bidder, $1,327,400. quartermaster COLD STORAGE PLANT at ALAMEDA, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids May 8.

CONTRACTS—HEAVY CONSTRUCTION

† **Borrow & Shafer Constr. Co.**, Everett, Wash. Contract Awarded. $119,055. rehabilitate for readiness and briefing facility at Paine Field, EVERETT, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash.

▲† **Willamette Iron & Steel Co.**, 2860 N. W. Front St., Portland, Ore. Contract Awarded. $3,814,100, Schedule A***Premier Gear & Machine Works, 1700 N. W. Thurman, St., Portland, Ore., $474,750, Schedule B, intake gates for McNary Dam, CIVENG 45-164-51-43, OREGON. U. S. Eng., 19 E. Poplar St., Walla Walla, Wash. Bids Apr. 17, awarded May 7. CD 4/23, under LB.

CONTRACTS—BUILDINGS

Howard S. Wright & Co., Inc., 407 Yale Ave. N., Seattle, Wash. Contract Awarded. $150,000. 2 story, part bsmnt. 120x198 ft., rein.-con. WAREHOUSE, SEATTLE, WASH. Broker's Warehouse, c/o Industrial Transfer & Storage Co., 1043 6 Ave. S., Seattle, Wash. CD 5/8.

▲ **Howard S. Wright & Co.**, 407 Yale Ave. N., Seattle, Wash. Contract Awarded. $4,750,000. 3 and 5 story, 41x184 ft., 41x200 ft., 62x164 ft., 41x170 ft. and 42x165 ft., rein.-con. HOSPITAL, SEATTLE, WASH. Children's Orthopedic Hospital, 100 Crockett St., Seattle, Wash. Young & Richardson, Carleton & Detlie, Central Bldg., Seattle, Wash., archts. CD 9/16/46.

Brchtel Corp., 220 Bush St., San Francisco, Calif., Contract Awarded, $764,000. 2 INDUSTRIAL BLDGS. at 1123 and 1125 Coleman St., SAN JOSE, CALIF. Food Machinery & Chemical Corp., 333 W. Julian St., San Jose, Calif. Awarded May 9.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska**—REFRIGERATED BLDG.—B.A. 6/5—U. S. Eng. (APO 942, c/o PM, Seattle, Wash.) Anchorage, 1 refrigerated bldg., Eielson Air Force Base, Inv. No. S95-507-51-75, $486,000. Plans deposit $10.

UNDERPINNING

Its Practice and Applications

Second Edition, Revised and Enlarged, published by Columbia University Press

By EDMUND ASTLEY PRENTIS and LAZARUS WHITE

The new edition of this authoritative technical description of underpinning methods and applications for foundation construction has been extensively revised and brought completely up-to-date. The authors describe in detail actual cases of every type of underpinning.

The volume also contains an introductory treatise on soil mechanics, nearly 200 photographs and drawings, and appendices which include, among other information, specifications, legal aspects of underpinning and foundation work, and a glossary of terms. Underpinning is considered the authoritative source for information in the field by engineers, architects, and contractors all over the world.

Price $10.00

COFFERDAMS

Second Edition, Revised and Enlarged, published by Columbia University Press

By LAZARUS WHITE and EDMUND ASTLEY PRENTIS

Cofferdams is the only engineering book devoted entirely to the design of cofferdams.

Presentation is made of theoretical considerations of the hydrodynamics of seepage forces, stream erosion, and lateral earth pressures for cofferdams on land and in water. Actual design and construction features are presented by detailed case studies of cofferdams which have come under the authors' supervision. Construction equipment, pumping stations, sheetpiling of wood and steel, bracing systems, excavation methods are among the features described. Actual cases of pitfalls and failures, as well as successes, are given.

This new edition contains 201 photographs and drawings, a glossary of terms, and a bibliography.

Price $10.00

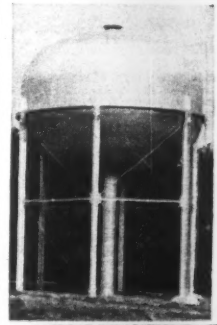
"Send order to Columbia University Press, 2960 Broadway, New York 27, N. Y."

SPENCER, WHITE & PRENTIS, INC.

10 EAST 40th ST. NEW YORK 16, N. Y.

602 HAMMOND BLDG. DETROIT 26, MICH.

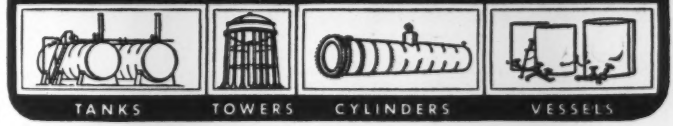
GAS Storage Tanks



• Whether you want conventional high-pressure units or something *special*—send us your inquiries. COLE can build you the kind of high-pressure tanks or vessels you require—any size, any shape, any metal. Our experience (of almost a century) in the design and fabrication of metal tanks may be of help to you. Write for catalog—"Tank Talk."

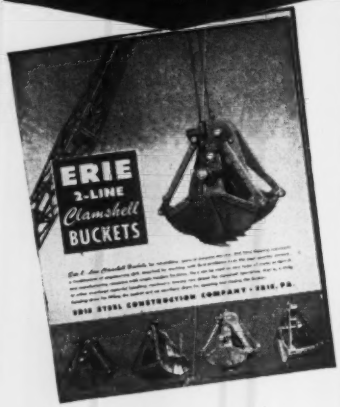
R. D. COLE MFG. CO.

NEWNAN, GA. *Established 1854*



TANKS TOWERS CYLINDERS VESSELS

HOW TO GET
Larger
BUCKET
PAYLOADS



This new Erie Catalog makes it possible to quickly choose, from the 4 classes of Erie 2-Line Buckets, the right bucket for *your* crane and material. Perhaps your crane can operate a larger bucket, for Erie alloy welded steel buckets result in greater payloads through scientific bucket weight reduction. Remember, that on bucket work, the cost of the crane and the operator all ride on the bucket. Send for this helpful catalog or outline your conditions and our engineers will make recommendations.

Write for Catalog **2L-2** *Today*

ERIE
STEEL CONSTRUCTION COMPANY
1150 GEIST RD., ERIE, PA

L. A. Thomas, Equitable Bldg., Portland, Ore., archt. CD 2/15.

† **Alaska**—REFRIGERATED WAREHOUSE—B.A. 6/19—U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, one refrigerated warehouse bldg. at Elelson-Air Force Base, Inv. No. S95-507-51-75. Plans deposit $25. Extended date. CD 5/2.

BIDS ASKED—BUILDINGS

† **Alaska**—HOSPITAL—B.A. 6/14—U. S. Eng., New Washington Hotel, Seattle 1, Wash., 5 story, rein.-con. 206-bed station hospital. Ladd Air Force Base, Inv. No. S95-507-51-33. Plans deposit $100.

LOW BIDDERS—BUILDINGS

▲† **Haddock Engineers, Ltd., & Assoc.**, Insurance Bldg., Seattle 4, Wash. Low Bidder. **$4,160,000.** 56 units family HOUSING, extend runway, construct taxiways, fuel storage, facilities and waterfront structures at Naval Base, Spec. 24153, KODIAK, ALASKA. Bureau Yards & Docks, Navy Dpt., Dir. Pacific and Alaskan Div., Treasure Island, San Francisco, Calif. Bids May 9. CD 5/1.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Alberta—B.A. 5/28—Ben Russell, dir. Water Resources, Province of Alberta, Terrace Bldg., Edmonton, 5 large rein.-con. drops, one rein-con. and structural steel railway crossing and appurtenant and structures. Plans deposit $10. CD 12/3/43.

Alberta—B.A. 5/29—Ben Russell, dir. Water Resources, Province of Alberta, Terrace Bldg., Edmonton, 14½ mi. canal of bed width of 4, 3 and 2 ft. with about 144 appurtenant structures, 4 mi. east and 5½ mi. south of Purple Springs. Plans deposit $10. CD 12/3/43.

BIDS ASKED—BUILDINGS

Ont., Ottawa—BUILDINGS—B.A. 5/29—Defence Const. Ltd., 441 Queens Quay W., Toronto, 3 buildings, Defence Research Chemical Laboratory bldg., respirator laboratory and pilot plant at Shirley Bay site. Approx. $350,000. Plans deposit $50. S. M. Connolly, c/o owner, engr. CD 12/1/43.

Que., Montreal—SCHOOL—B.A. 5/29—Catholic School Comn., 117 W. Ste. Catherine St., Montreal, 64x150 ft. rein.-con., brick school, Papineau Ave. Duplessis & Assoc., 822 Sherbrooke St., Montreal, archts. CD 12/6.

Ont., Ottawa—HEATING PLANT—B.A. 6/6—Dpt. Pub. Wks. Secy. c/o owner, Ottawa, Ont., changes and addns. Central heating plant, Cliff St. Approx. $700,000. Plans deposit $100. G. Brault, c/o owner. archt.

CONTRACTS—HEAVY CONSTRUCTION

City Constr. Ltd., 107 E. 1st Ave., Vancouver, B. C. Contract awarded as **$179,543**, b. conc. paving streets at Proj. 6-N-2, Fraser View, VANCOUVER, B. C. Central Mortgage & Housing Corp., 360 Homer St., Vancouver, B. C. J. L. Adams, c/o owner, engr. Awarded May 5.

Pearson Constr. Co. Ltd., 1019 Erin St., Winnipeg, Man. Contract Awarded, Approx. **$700,000.** 3 buildings at R.C.A.F. Station, McDONALD, MAN. Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man. Bids Apr. 3. CD 3/26.

W. B. Bennett Constr. Co., Box 305, Oshawa, Ont., Contract Awarded. **$200,762.** street repairs, LINDSAY, ONT. Town, W. R. Alleley, clk., Lindsay, Ont. Awarded May 8.

▲ **Ross-Meagher Ltd.**, 9 Echo Dr., Ottawa, Ont. Contract Awarded. Approx. **$1,044,000.** 24 m. g. water reservoir at Carlington Heights, OTTAWA, ONT. City, City Hall, Ottawa, Ont. CD 5/1, under LB.

▲ **Pentagon Constr. Co. Ltd.**, 1225 Bishop St., Montreal, Que. Contract Awarded. Approx. **$13,000,000,** excavating and concrete work at Peribonka River No. 2 development chutes and Savanne, also placing some equipment, QUEBEC. Aluminum Co. of Canada, Ltd., Sun Life Bldg., Montreal, Que. Shawinigan Eng. Co. Ltd., 600 Dorchester St. W., Montreal, Que. engr. CD 5/10.

Plourde & Deshiens, Ltd., Laterriere, Que. Contract Awarded, **$94,364.** sewage treatment plant, trunk sewer, outfall sewer at R.C.A.F. Station, BAGOTVILLE, QUE. Defence Constr. Ltd., 70 Lyon St., Ottawa, Ont. Bids Apr. 10. CD 3/27.

H. J. O'Connell, Ltd., Canada Cement Bldg., Montreal, Que. Contract Awarded. Approx. **$380,000.** Sidewalks and paving, MOUNT ROYAL (Postal Dist., Montreal) QUE. Municipality, Mount Royal, Que. R. J. MacNeil, 90 Roosevelt Ave., Mount Royal, Que., engr.

▲ **Louis B. Magil Co.**, 5275 Queen Mary Rd., Montreal, Que. Contract Awarded, Approx. **$1,200,000.** 5 buildings at R.C.A.F. Station, ST. HUBERT, QUE. Defence Constr. Ltd., 1247 Guy St., Montreal, Que. Bids Apr. 24. CD 4/11.

C. Duranceau, Ltd., 2545 Jacques Hertel, Montreal, Que. Contract Awarded. **$139,673.** Wid'n. paving Lansdowne Ave., repairing Cote Ste. Antoine Rd.; reconstruct Summit Circle, asph. surf. Sherbrooke St., WESTMOUNT, QUE. Municipality, Westmount, Que. T. J. Hughes, City Hall, Westmount, engr. CD 12/1/49.

CONTRACTS—BUILDINGS

Rosehall Nurseries, Brantford, Ont. Contract Awarded. **$66,110.** Landscaping area occupied by 270 houses at Proj. 6-T-2, Fraser View, VANCOUVER, B. C. Central Mortgage & Housing Corp., 360 Homer St., Vancouver, B. C. J. L. Adams, c/o owner, engr. Awarded May 5. CD 10/18/50.

Anglin Norcross Quebec, Ltd., 892 W. Sherbrooke St., Montreal, Que. Contract Awarded. Approx. $100,000. Exten. 1 story, 110x120 ft., rein.-con., brick BREWHOUSE, MONTREAL, QUE. Canadian Breweries, Ltd., 450 Beaumont St., Montreal, Que. CD 2/2.

Laflamme & Lafleur, 327 Notre Dame St., Thetford Mines, Que. Contract Awarded. Approx. **$373,318.** 2 story bsmnt. 55x180 ft. rein.-con. frame, brick SCHOOL, THETFORD MINES, QUE. School Comn., Thetford Mines, Que. CD 12/26.

FOREIGN

BIDS ASKED—HEAVY CONSTRUCTION

Iraq—B.A. 8/20—Development Board of the Government of Iraq, Baghdad, Iraq, construct an inlet channel, protective dyke on left bank of channel, an embankment for railway diversion, and works in connection therewith in vicinity of Samarra on the River Tigris, Wadi Tharthar Works.

LATIN AMERICA

BIDS ASKED—HEAVY CONSTRUCTION

Argentina—B.A. 7/12—Argentine Ministry of Trade & Industry, Oficinas de Talleres y Suministros, Lavalle 1556, Buenos Aires, from firms willing to undertake civil works for hydro-electric plant "San Roque" in Cordoba Province.

Argentina—B.A. 9/26—Argentine Ministry of Trade & Industry, Oficinas de Talleres y Suministros, Lavalle 1556, Buenos Aires, supply electro-mechanical installations for "Andersen" hydro-electric and transformer plant in Rio Negro territory.

PROPOSED PROJECTS

WATER SUPPLY

Colo., Arvada—City, City Hall, one 100,000 gal. and one 300,000 gal. reservoirs, **$125,000.** Ripple & Howe, Cooper Bldg., Denver, consult. engrs.

Ill., Calumet City—City, City Hall, WW and mains, **$500,000.** Leo Besozzi, 5217 Hohman St., Hammond, Ind., consult. engr. Frank Blocker, City Hall, city engr.

La., Ferriday—City, voted $115,500 bonds, WW imprvs.

Mass., Auburn—Town, Bd. Selectman, Town Hall, pumping station, standpipe, equip., Rochdale St., Wallace and Buyland Aves. **$150,000.**

Miss., Amory—City, voted **$300,000** bonds Apr. 27. WW imprvs. CD 4/17.

S. D., Rapid City—City, voted bonds, reservoir and trunk distr. mains, **$360,000;** water line, installation of pipe and meters, **$165,000.** CD 3/28.

Tex., Big Spring—City, 50,000 in. ft. 8-to 20-in. c.i. distr. water sys., appurtenances. **$450,000.** Freese & Nichols, 457 Danciger Bldg., Fort Worth, consult. engrs. CD 3/2.

Tex., El Campo—City, voted bonds May 7; Proj. 1, surface concrete reservoir **$57,500;** Proj. 2, elevated steel tank and tower, **$37,500;** Proj 3, water supply well, distr. lines, **$55,000;** future WW sys. expansion, **$50,000.** CD 4/18.

Tex., Forney—City, water supply (unit of a pipe network system) from Lavon Dam. **$250,000.** Carr Forrest & James Cotton, Praetorian Bldg., Dallas, consult. engrs. CD 4/23.

Tex., Greenville—Town, WW. **$600,000.** Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 7/5/49.

Tex., Palestine—City, expanding, imprv. sanitary sewerage sys. 3/14/46.

Tex., Royse City—City, water supply (Unit of pipe network system) from Lavon Dam. **$225,000.** Carr Forrest & James Cotton, Praetorian Bldg., Dallas, consult. engrs. CD 4/23.

SEWERS, WASTE DISPOSAL

Ia., Clinton—City and U. S. Eng., Rock Island, Ill., pump. station for sewerage sys. for flood protection **$360,000.**

▲ **Mo., North Kansas City**—City, City Hall, Zone 16, enlarging sanitary sewerage sys. **$5,000,000.** C. E. Ellerbrook, City Hall, Zone 16, city engr.

Okla., Claremore—City, voted bonds, sewage disposal plant. **$150,000.** Wood & Craig, Phiftower Bldg., Tulsa, Okla., consult. engrs. CD 4/4.

S. D., Rapid City—City, voted bonds, sewage treatment plant equip. **$150,000.** CD 3/28.

Tex., Greenville—Town, sanitary sewerage sys. **$350,000.** Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult engrs. CD 7/5/49, under Water Supply.

Tex., Palestine—City, expanding, imprv. sanitary sewerage sys. **$300,000.**

BRIDGES

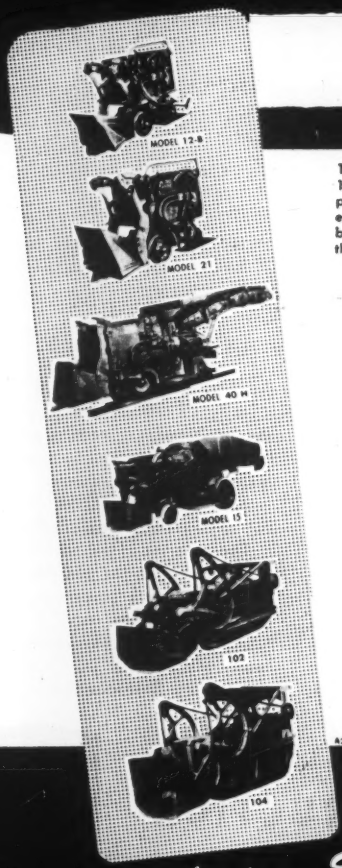
N. C., Tarboro and Grifton—Atlantic Coast Line R.R. Co., R. L. Groover, ch. engr., Wilmington, railroad bridge over Tar River at Tarboro, **$100,000,** railroad bridge over Contentea Creek at Grifton, **$83,000.**

(Continued on page 105)

CASE HISTORY OF A SUCCESSFUL TUNNEL JOB

FROM THE EIMCO FILE T270

KEYHOLE DAM TUNNEL



The Keyhole Dam outlet tunnel near Moorcraft, Wyoming 654' in length. Approximately 11'x12' arched cross section. Tunnel driven in 35 shifts. Average round 8.06 ft. 2.33 rounds per shift. 33.15 — 9' holes per round. Average 2.66 lbs. powder per cubic yard. Loading equipment—Eimco 102 RockerShovel. One interesting fact about this tunnel is the use of roof bolting instead of steel or wood sets. Using 4.40 ft. of Roof Bolts for each foot of tunnel the contractor was able to make exceptionally good time. Haulage units used were Dumptors.

Eimco RockerShovels are well known in mining circles all over the globe. The Eimco is the first successful underground loading machine of its type and today thousands of these hard rock loading machines are at work loading about 80% of all rock loaded underground.

Six separate and distinct models cover the complete range of tunnel sizes from small 5'6" sewer tunnels to large hydro-electric and railroad size tunnels.

Eimco equipment is engineered for the job. Let us tell you how an Eimco can save you money as it does thousands of users every day.

Write for bulletin L-1024 on "How an Eimco Can Save You Money."

EIMCO

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines

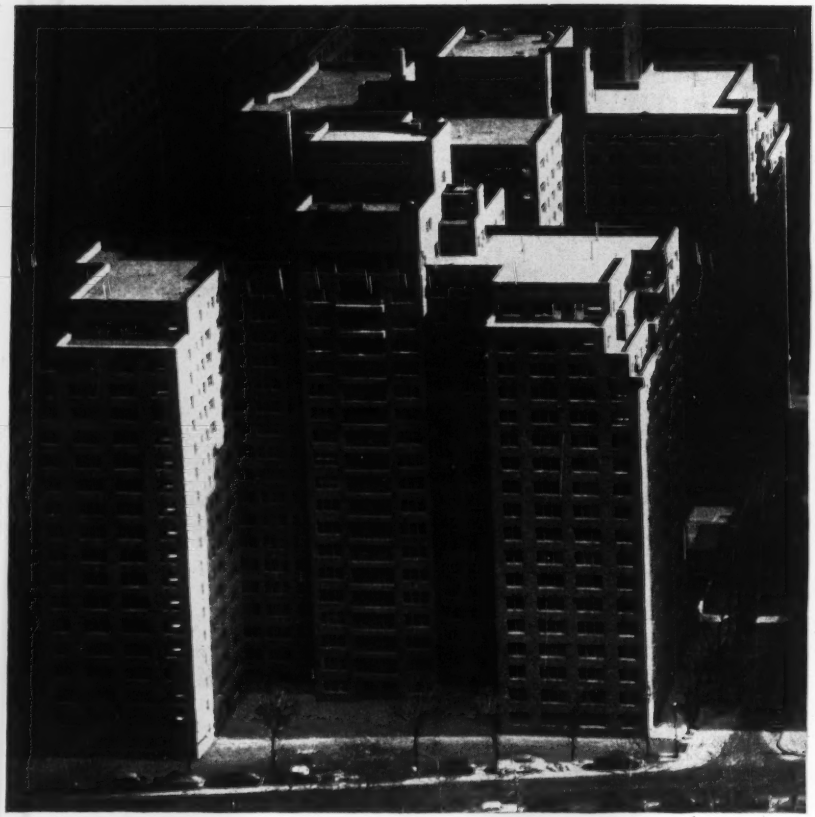
EXECUTIVE OFFICES AND FACTORIES — SALT LAKE CITY 10, UTAH, U. S. A.

BRANCH SALES AND SERVICE OFFICES

NEW YORK 17 52 SOUTH STREET • CHICAGO 3319 SOUTH WALLACE STREET
BIRMINGHAM, ALA. 3140 FAYETTE AVE • DULUTH, MINN. 206 E. SUPERIOR ST.
EL PASO, TEXAS, MILLS BUILDING • BERKELEY, CALIFORNIA, P. O. BOX 240
KELLOGG, IDAHO, 107 DIVISION STREET

IN FRANCE: SOCIETE EIMCO, PARIS, FRANCE
IN ENGLAND: EIMCO (GREAT BRITAIN) LTD., LEEDS 12, ENGLAND
AGENTS IN ALL PRINCIPAL CITIES THROUGHOUT THE WORLD

You can't beat an Eimco!



Schwab House, 651-family, 2200-room apartment building in New York City. *Builder and Owner:* 11 Riverside Drive Corp., Julius Perlbinder, President; *Renting and Managing Agents:* Herbert Charles & Co., Inc.; *Architect:* Sylvan Bien, New York; *Structural Engineers:* Weinberger & Weishoff, New York. Steel framework was fabricated and erected by Bethlehem.

Schwab House

High above the Hudson River in New York City stands Schwab House, an 18-story apartment building named for the late Charles M. Schwab, long recognized as the leader of the steel industry, and the founder of Bethlehem Steel.

Schwab House occupies the site of the former Schwab mansion, which for years was one of New York's landmarks. The structure is bounded by Riverside Drive, West End Avenue, West Seventy-third and Seventy-fourth Streets, and commands a sweeping view of the river, and of the busy West Side Express Highway.

Schwab House exemplifies modern living at its best. It has facilities for 651 families. It contains 2200 bright, cheerful rooms, and its apartment units vary in size from 1½ rooms to 5½ rooms. The structure includes penthouse apartments, terraces, restaurant, and two dance lounges. Its basement garage can accommodate 200 automobiles. It is serviced by a bank of 6 high-speed, gearless elevators.

The exterior of Schwab House is done tastefully in red brick and limestone, with large aluminum-framed windows, and covers a steel framework weighing 5322 tons, which was fabricated and erected by Bethlehem.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

FABRICATED STEEL CONSTRUCTION

BETHLEHEM STEEL

(Continued from page 102)

† **Tennessee**—State Hy. Dpt., Memorial Bldg., Nashville, bridge over Loosahatchie River and bridge over Crooked Creek, Route 14, Austin Peay Hy. $1,000,000. S. Squires, c/o owner, ch. engr.

STREETS AND ROADS

Colo., Denver—City and Denver Co., City-County Bldg., Street Paving Dist. 173, c. conc. curb, gutter, sidewalk, grav. base course, b. conc. incidental imprvs. and storm sewer in vicinity of Poplar St. and Richtofen Pl., Terry Owens, City and County Bldg., Denver, city engr.

▲ **Ky., Louisville**—City, City Hall, street imprvs. to Broadway, $246,000; Western Algonquin Parkway sys., $389,000; Seventh St. sys., $188,000; St. Catherine-Oak-Dumesnil sys., $600,000; Barrett-Lexington Rd. sys., $290,000, W. W. Sanders, city engr. CD 11/10.

▲ **La., New Orleans**—City, City Hall, voted $5,800,000 bonds Apr. 24, street imprvs.

Neb., Omaha—Douglas Co., surfacing, resurfacing roads. $600,000. Wm. Green, Omaha, co. engr. CD 2/6/50.

Neb., Plattsmouth—Cass Co., county highway repairs. $150,000. Frank Dail, Plattsmouth Co., surv.

N. J., Trenton—Bd. Freeholders, Mercer Co., Court House, repaving Spruce St. Ewing Twp.; N. Main St., Old York Rd., Hightstown, Hamilton Ave. from Ward Ave. to Trenton city line Hamilton Twp.; Yardville-Groveville Rd. from Broad St. to Route 25, Hamilton Twp., Main St., Pennington and Broad St., Hopewell, $345,000. Edward L. Mount, Court House, co. engr. CD 12/21/44.

▲ **New York**—Dpt. P. Wks., State of New York, Albany, **Cattaraugus Co.**—7.4 mi. arterial route sys. in Olean, $2,534,000.

Oswego Co.—8.3 mi. arterial route system into and through Oswego, $2,198,50.

▲ **New York**—State Dpt. P. Wks., Albany. **Westchester Co.**—10.2 mi. arterial route system, at White Plains, $11,873,000.

▲ **North Carolina**—State Hy. Comn., Raleigh, **McDowell Co.**—Old Fort-Ridgecrest Hy. relocation. $1,000,000.

Tex., Greenville—Town, Street imprvs. and hard-type paving. $750,000. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 7/5/49, under Water Supply.

Tex., Houston—City, Oscar Holcombe, mayor, City Hall, 900 Brazos St., special shelling and gravelling various streets. $500,000. L. Fugate, city engr. CD 5/24/49.

Wash., Seattle—City, County-City Bldg., Seattle, Zone 4, paving 26 Ave. W. and other streets, $198,181, alley in Block 17, Denny Furhman Addn., $10,224. R. W. Finke, city engr.

▲ **Ont., Toronto**—East York Twp., Coxwell and Mortimer Aves., road wid'n. O'Connor Dr., imprvts. and street paving, $1,000,000.

AIRPORTS

Ariz., Phoenix—ADMINISTRATION BLDG.—City, plans by Lescher & Mahoney, Title and Trust Bldg., airport tecminal administration bldg. and offices, $835,000. CD 11/29/46.

Mo., Kansas City—AIRPORT IMPRVS.—City, Dir. Aviation, City Hall, Zone 6, 194x200 ft. hangar, 300-1,000 ft. concrete apron, maintenance work at municipal airport, $300,000, Slick Airways, Inc., lessee. CD 11/10/47.

† **Tex., Corpus Christi**—RADAR STATION—Dpt. of Air Force, The Pentagon, Wash. 25, D. C., construct radar station. $750,000.

† **Tex., Fort Worth**—RADAR STATION—Dpt. of Air Force, The Pentagon, Wash. 25, D. C., construct radar station. $750,000.

† **Tex., San Antonio**—RADAR STATION—Dpt. Air Force, The Pentagon, Wash. 25, D. C., construct radar station. $750,000.

▲ **Ont., Ottawa**—HOUSES—S. M. Connolly, engr., Central Mortgage & Housing Corp., 441 Queen's Quay, W. Toronto, constr. 2200 houses, shopping centre, installing water mains, sewers, electrical work at Uplands Airport for R.C.A.F. Approx. $2,000,000.

PUBLIC BUILDINGS

Ala., Selma—HOUSING—Selma Housing Auth., Selma, plans by Raymond Sizemore, 16 S. Hull St., Montgomery, Proj. ALA 8-3, 84 housing units, $750,000.

▲ **Calif., Montebello**—SCHOOLS—Montebello Unified School Dist., 123 S. Montebello St., $1,500,000 bond election June 1, schools. CD 11/9/49.

Colo., Aurora—SCHOOL—School Dist. 28-J, Consolidated Dist. of Adams and Arapahoe Counties, 9735 E. Colfax Ave., 2 new grade schools and Junior High School addn. $536,000. Atchison & Koverstrom, 1254 Monaco Parkway, Denver, consult. engr.

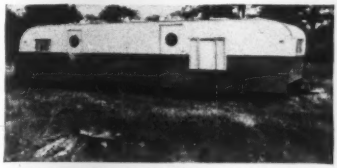
▲ **Conn., New Haven**—PHYSICAL EDUCATION—State P. Wks. Comr., State Office Bldg., Hartford, plans by Douglas Orr, 96 Grove St., physical education bldg. $1,500,000. Moore & Salisbury, 10 Main St. W., Hartford, engrs. CD 1/13/49.

• **Contractors & Engineers**

FIELD OFFICE TRAILER

Modernize your field office with latest and up to date office trailer — designed to meet your requirements.

Model #10 29' overall, $2995 f.o.b. Balto. with toilet and lavatory $200 extra.



Model #20 35' overall, $3295 f.o.b. South Whitley, Ind. with toilet and lavatory $200 extra

Spec. each trailer—Natural beautiful birch finish—drafting table, 8'x3'-6"—8 letter files built in—8 drawers—cabinets—one closet — heated with oil stove — insulated—electric lights—wired for 2 telephones—2 rooms.

TRAILER VILLAGE, INC.
8645 Pulaski Highway
Balto, 21, Md.
Phone Essex 2233

Please send me office trailer plan Model No. .... and pictures of interior.

Name .....
Firm Name .....
Address .....

High Grade Hardwood
SURVEYOR STAKES
Stained Yellow Bound with Steel Strapping

	Per 100	In 1000 Lots Per 100
2x3—12"	$ 7.15	$ 6.50
—15"	8.80	8.00
—18"	9.60	8.70
—24"	11.50	10.45
—36"	16.50	15.05
GRADE STAKES		
1x2—12"	5.60	5.10
—15"	5.75	5.20
—18"	5.80	5.25
—24"	6.90	6.25
—36"	9.70	8.80

Prices net F.O.B. Cumberland, Md.

BUCHANAN LUMBER CO.
CUMBERLAND, MD.

The BELMONT IRON WORKS

Engineers — Fabricators — Erectors
Contractors — Exporters
Cable address—Beliron

STRUCTURAL STEEL
BUILDINGS & BRIDGES
RIVETED — ARC WELDED
Shops — Eddystone

PHILADELPHIA
Main Office
22nd St. & Washington Ave.
Philadelphia 46, Pa.

ROYERSFORD
New York Office
44 Whitehall St.,
N. Y. 4, N. Y.

GRIFFIN has dried thousands of them! Our **WELLPOINT SYSTEMS** and know-how let you "work dry"—at lower cost!

FREE* HANDBOOK

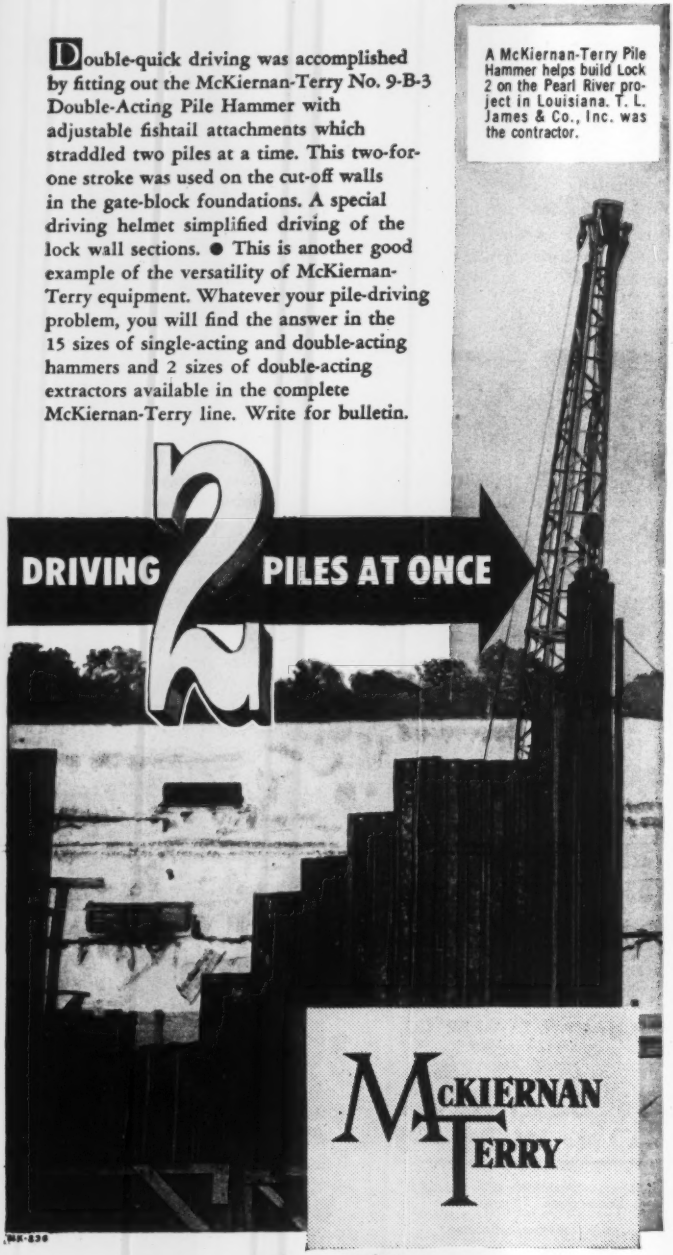
BE SURE: Let us estimate dewatering costs for your next job.

GRIFFIN WELLPOINT CORPORATION
881 East 141st Street, New York 54, N. Y
Please send me free copy of "WELLPOINT SYSTEM in Principle and Practice."
Name.....
Title.....
Firm.....
Address.....
.....

Clip this coupon to your letterhead. FREE to Engineers and Contractors, only. Regular price to all others, $1.50.

Double-quick driving was accomplished by fitting out the McKiernan-Terry No. 9-B-3 Double-Acting Pile Hammer with adjustable fishtail attachments which straddled two piles at a time. This two-for-one stroke was used on the cut-off walls in the gate-block foundations. A special driving helmet simplified driving of the lock wall sections. ● This is another good example of the versatility of McKiernan-Terry equipment. Whatever your pile-driving problem, you will find the answer in the 15 sizes of single-acting and double-acting hammers and 2 sizes of double-acting extractors available in the complete McKiernan-Terry line. Write for bulletin.

A McKiernan-Terry Pile Hammer helps build Lock 2 on the Pearl River project in Louisiana. T. L. James & Co., Inc. was the contractor.



McKIERNAN TERRY

GRAB BUCKETS

COAL TOWERS

TRANSFER BRIDGES

HONING TO 42" I. D.

McKIERNAN-TERRY CORPORATION, MANUFACTURING ENGINEERS • 13 PARK ROW, NEW YORK 7, N. Y.
PLANTS: HARRISON, N.J. and DOVER, N.J.

▲ **Conn., Waterbury**—HOUSING—City Housing Auth., 24 Warner St., plans by Holden McLaughlin & Assoc., 570 Lexington Ave., New York, N. Y., 400 housing units, $1,000,000.

▲ **Fla., Tampa**—HOSPITAL WING—City, plans by Eliot C. Fletcher & Norman Six, Hillsboro Hotel, Tampa, and Schmidt, Garden & Erikson, 104 S. Michigan Ave., Chicago, Ill., 253-bed Tampa Hospital Wing, $4,000,000.

Ill., Gurnee—SCHOOL, etc.—Warren Twp. School Dist., Gurnee, plans by Wright-Alderman & Martin, 134 N. LaSalle St., Chicago, grade school and gymnasium $500,000.

† **Ky., Fort Campbell**—SCHOOL—Community Facilities Service, Wave Bldg., Louisville, plans by Otis & Grimes, Tyler Bldg., Louisville, 2 story, brick, concrete block school for post personnel children, $585,000.

† **Ky., Fort Knox**—SCHOOL—Community Facilities Service, Wave Bldg., Louisville, plans by Otis & Grimes, Tyler Bldg., Louisville, 2 story, brick school for post personnel children, $450,000.

Ky., Nicholasville—SCHOOL—Fayette Co. Bd. Educ., Lexington, plans by John F. Wilson, 508 E. Main St., Lexington, 1 story, 400x400 ft. U-shaped school, $500,000.

▲† **Md., Fort George Meade**—BARRACKS, etc.—U. S. Eng., 24 St. and Maryland Ave., P. O. Box 1715, Baltimore, Zone 3, barracks, mess halls, admin. bldg., headquarters bldg., motor repair shop, storehouses, chapel, post exchange, infirmary, etc. $6,000,000-$8,000,000, Turpin, Wachter & Assoc., 1004 N. Charles St., Baltimore, engrs.

▲**Mass., Lawrence**—HOUSING—City of Lawrence Housing Auth., J. J. Sirois, Dir., 46 Melvin St., plans by Pearson, Alter & James, 351 Essex St., one hundred and ninety-five 2 story, bsmnt. veterans' housing units, 4, 6 and 8 suite bldgs. of 3 and 4 rooms, Hancock St., Proj. PHA 10-2, $2,000,000.

▲ **Mass., Lowell**—HOUSING—City of Lowell Housing Auth., City Hall, plans by Krokyn & Browne, 184 Boylston St., Boston, 550 unit housing. $1,000,000. CD 1/27/50.

Mich., Ionia—HOSPITAL—Ionia Co. Memorial Hospital Assn., Ionia, plans by Lewis J. Sarvis, 258 Champion St., Battle Creek, concrete hospital. $650,000.

▲ **Miss., Natchez**—SCHOOL—City, voted $2,000,000 bonds school imprvs. CD 5/19.

▲ **Mo., St. Louis**—SCHOOL—Bd. Educ., V. Harry Rhodes, comr., Bd. Educ. Bldg., 911 Locus St., Zone 1, plans elementary school to replace present Ames School, 1313 Hebert St., $1,011,600; defeated bonds May 1, school addns., $17,230,000. CD 3/26.

▲ **Neb., Lincoln**—SCHOOLS—Bd. Educ., 720 S. 22 St., voted $6,000,000 bonds, schools. CD 4/3/50 and 3/9/51.

S. C., Edgefield—HOUSING—Edgefield Housing Auth., Edgefield, housing units. $300,000.

Tenn., Manchester—HOSPITAL—Coffee Co., Manchester, plans by Bianculli, Palm & Purnell, 501 Cherry St., Chattanooga, hospital. $950,000.

Tenn., Maryville—SCHOOL—City, plans by Lindsay & Maples, Daylight Bldg., Knoxville, West Side Grammar School. $300,000.

Tex., Borger—SCHOOL—Borger Independent School Dist., Borger, plans by Macon O. Carder, Fisk Bldg., Amarillo, (Tex. 51-G-57-B) 1 story 6-room school and remodeling on another, masonry type. $300,000.

Tex., College Station—ENGINEERING—Agricultural & Mechanical College of Texas, College Station, plans by Adams & Adams, 518 W. Davis St., Dallas, 3 story, 35,000 sq. ft. engineering bldg., concrete pier and beam fdn. $400,000. CD 2/10/50.

Tex., Fort Worth—HIGH SCHOOL—White Settlement School Dist., 8153 White Settlement Rd., plans by Paul T. Cahill, 314 Insurance Bldg., high school. $822,300. A. B. Withers Co., Insurance Bldg., consult. engr. CD 2/16.

▲ **Tex., Houston**—STUDENT UNION and SERVICES—University of Houston, 705 Fannin St., Houston, plans by Alfred C. Finn, Bankers Mortgage Bldg., student union and services bldg. $2,000,000. CD 6/14/49.

Tex., Kerrville—INSTITUTION—Board for state Hospitals & Special Schools, 901 W. 45 St., Austin, plans by Giesecke, Kiehne & Brooks, 205 E. 8 St., Austin, 300-bed institution for senile folk. $700,000. CD 5/7.

Tex., San Antonio—BOYSVILLE VILLAGE—Boysville, c/o Frank Falk, pres., Avenue B, plans by Phelps, DeWees & Simmons, 1501-6 Majestic Bldg., Boysville village, off Austin Hy. near Randolph Air Force Base. $300,000.

Tex., Texas City—HOUSING—Texas City Housing Auth., Texas City, plans by Wyatt C. Hedrick, archt. and engr., 5201 Fannin St., Houston, 6 two story housing-bldgs. and one 1 story management bldg., brick, concrete slab fdn. $700,000. CD 10/20/49.

▲ **Utah, Salt Lake City**—HIGH SCHOOL—Granite School Dist., 3212 S. State St., plans by Young & Ehlers, Continental Bank Bldg., Senior High School, 23 East St. and 41 South St. $1,200,000.

Wash., Colville—SCHOOL—School Bd. Colville, special levy voted school, $300,000. CD 4/18.

† **Wyo., Cheyenne**—HOSPITAL—Veterans Admin., 1810 Munitions Bldg., Wash., D. C., 3 story hospital addn., will provide service women's ward. $575,000.

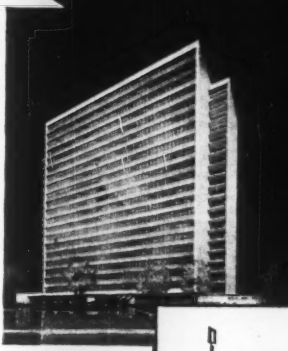
▲ **Alaska, Anchorage**—HIGH SCHOOL—City, City Hall, high school. $4,000,000.

▲ **Alaska, Bethel**—HOSPITAL—Alaska Native Service, Dpt. Interior, 19 and C Sts., Wash. 25, D. C., plans by Voss, Malcolm & Olsen, Juneau, hospital. $3,500,000. CD 3/26.

Que., Montreal—SCHOOL—Catholic School Comn., 117 W. Ste. Catherine St., plans by Crevier & Assocs.,

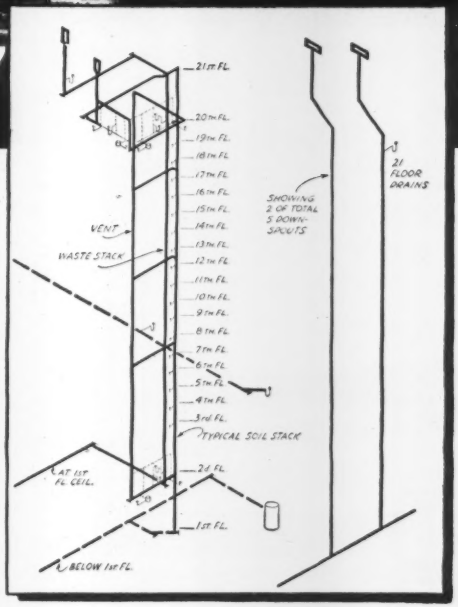
(Continued on page 109)

Architects and Master Plumbers Recommend CLOW "IPS"* (THREADED) CAST IRON PIPE For NEW 21 Story Apartment Building



Section of original riser blueprint of Sheridan Towers, modern 21 story apartment building on Chicago's beautiful Sheridan Road, with Clow "IPS" (threaded) Cast Iron Pipe indicated most prominently.

- **ARCHITECTS:** Shaw Metz & Dolio
- **PLUMBING CONTRACTOR:** Charles Thumm Co.



Here's why the Plumbing Contractor chose Clow "IPS" (threaded) Cast Iron Pipe:

"We chose Clow 'IPS' Pipe for the downspouts, waste and vent piping in this new apartment building because it stands up against corrosion", said Mr. Fred H. Keske, Vice President of the Charles Thumm Co. "It's a well known fact that cast iron pipe will outlast the building itself. Our own experience in replacing many wornout installations with Clow 'IPS' Pipe has sold us on its long-term worth. On this particular job availability was important, too. The fact that we could get the 9300 feet we needed right away meant keeping our men working steadily on this project."

Here's why the Architects specified Clow "IPS" (threaded) Cast Iron Pipe:

According to Mr. John Dolio of Shaw Metz & Dolio, Clow "IPS" Pipe was specified not only because of its long life service, but also because of its great flexibility.

In a building 21 stories high, such as this, the piping must be able to withstand considerable strain. Tests showed that Clow "IPS" Pipe will take more than three inches of sway and still remain bottle-tight at the threaded connections.

Clow "IPS" (threaded) Cast Iron Pipe is available with plain or threaded ends, in 3, 4, 5, 6, 8 and 10″ sizes in 18′ random lengths. Also furnished with integral caulking hub on one end (other end plain) in 18′ random lengths in 4, 6 and 8″ sizes.

**"IPS" is iron pipe size O. D.*

CLOW "IPS" CAST IRON PIPE CAN BE . . .

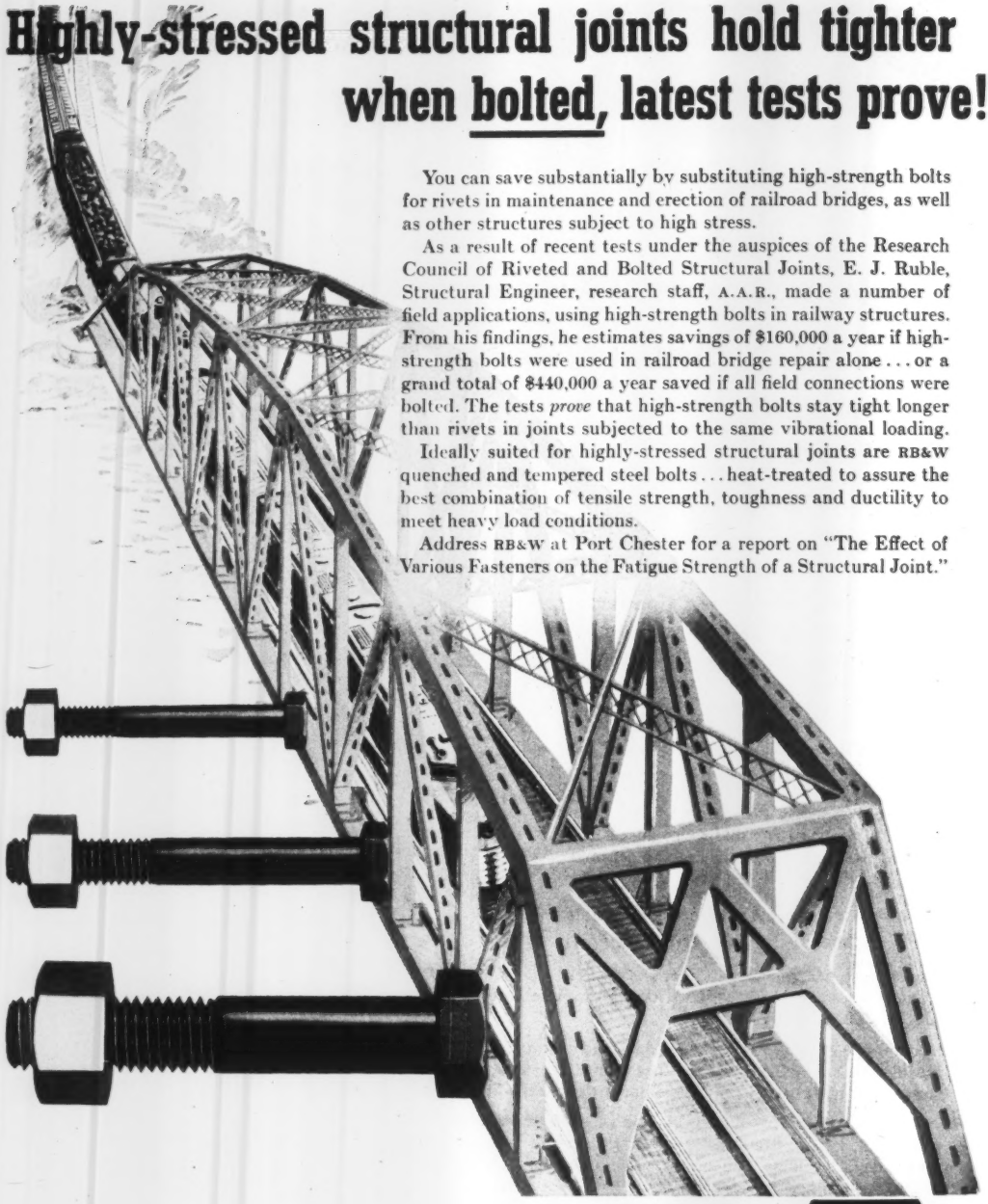
on the job, with ordinary tools of the piping trade.

JAMES B. CLOW & SONS

201-299 North Talman Avenue • Chicago 80, Illinois

and their National Cast Iron Pipe Division, Birmingham, Alabama, subsidiaries
Eddy Valve Co., Waterford, New York.
Iowa Valve Co., Oskaloosa, Iowa

Highly-stressed structural joints hold tighter when bolted, latest tests prove!



You can save substantially by substituting high-strength bolts for rivets in maintenance and erection of railroad bridges, as well as other structures subject to high stress.

As a result of recent tests under the auspices of the Research Council of Riveted and Bolted Structural Joints, E. J. Ruble, Structural Engineer, research staff, A.A.R., made a number of field applications, using high-strength bolts in railway structures. From his findings, he estimates savings of $160,000 a year if high-strength bolts were used in railroad bridge repair alone . . . or a grand total of $440,000 a year saved if all field connections were bolted. The tests *prove* that high-strength bolts stay tight longer than rivets in joints subjected to the same vibrational loading.

Ideally suited for highly-stressed structural joints are RB&W quenched and tempered steel bolts . . . heat-treated to assure the best combination of tensile strength, toughness and ductility to meet heavy load conditions.

Address RB&W at Port Chester for a report on "The Effect of Various Fasteners on the Fatigue Strength of a Structural Joint."

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Dallas, Oakland. Sales agents at: Portland, Seattle

RB&W
THE COMPLETE QUALITY LINE

106 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

5276 Notre Dame de Grace Ave., school for Parish of Ste. Catherine $350,000. CD 12/6.

▲ **Que., Montreal**—STUDENT CENTRE—University of Montreal, 2900 Mount Royal Blvd., plans by L. Venne, 3607 St. Denis St., student centre at University, Approx. $2,700,000. CD 4/18/50.

Que., Montreal—SCHOOL—Protestant Bd. School Comrs., 3460 McTavish St., Montreal, school, Clanranald Ave., $300,000; school, Cote St. Luc Rd., $300,000.

Ont., Mount Forest—SCHOOL—Mount Forest District High School Bd., J. C. Richardson, secy., high school. Approx. $350,000. CD 1/24/47.

Que., St. Laurent (Postal Dist. Montreal)—SCHOOL—Protestant Bd. School Trustees, 102 Cardinal St., St. Lawrence, plans by S. & S. C. Comber, 4444 W. Sherbroke St., Montreal, high school exten. $350,000.

COMMERCIAL BUILDINGS

Calif., Claremont—DORMITORY—Pomona College, Claremont, plans by Spalding & Rex & DeSwarter, 3305 Wilshire Blvd., Los Angeles, 2 story rein.-con. mens dormitory. $575,000.

Calif., Los Angeles—DWELLINGS—Linton Homes, Inc., 737 N. Highland St., plans by E. B. Rust, 446 Chelsea Way, San Garbiel, 42 frame, stucco dwellings in Enadia Way, Gault and Vost Sts. $350,000.

▲ **Fla., Miami Beach**—HOTEL—Irving Kipnis, 1610 M Meridian Ave., hotel on ocean south of Sea View, $4,000,000.

Ill., Rockford—APARTMENT—Owner, c/o Barancik & Conte, archts., 919 N. Michigan Ave., Chicago, Zone 11, 10 story, rein.-con. apartment. $500,000.

La., Abbeville—SCHOOL—Mount Carmel Mother Mary Grace, c/o H. J. Lagroue, archt., 317 W. Main St., Lafayette, high school. $400,000.

Mass., Worcester—BANK—Worcester County Trust Co., 466 Main St., 1 story, bsmnt., brick bank-drive in branch, Park Ave. between Chandler and Pleasant Sts., $300,000.

Mich., Detroit—DORMITORY—Florence Crittenton Hospital, 1550 Tuxedo St., plans by O'Dell, Hewlett & Luckenbach, 2300 Dime Bldg., 3 story, brick, masonry 30,000 sq. ft. dormitory. $325,000.

▲ **Mich., Detroit**—SHOPPING CENTER—J. L. Hudson Co., 1206 Woodward St., Zone 1, plans by Greun & Krummeck, 1905 Industrial Bank Bldg., shipping center, Eight Mile and Kelly Rds. $15,000,000.

Mich., Grosse Pointe (Br. Detroit)—HOSPITAL—Cottage Hospital, 159 Kercheval St., plans by Smith-Hinchman & Grylls, 800 Marquette Bldg., Detroit, hospital addn. $750,000.

Neb., Om...—OFFICE—Fairmont Foods Co., 12 and Jones Sts., 2 story office, 32 and Farnam Sts. $400,000.

N. Y., Brooklyn—APARTMENT—Martin Weisberger, 26 Court St., Zone 2, plans by Julius Fishkind, 161-19 Jamaica Ave., Jamaica, N. Y., 6 story apartment, 115 E. 53 St. $650,000.

N. Y., Elmhurst—HOSPITAL—Associated Medical Properties, Inc., 90-02 Queens Blvd., Elmhurst, plans by A. H. Salkowitz, 37-60 82 St., Jackson Heights, hospital alterations, Queens Blvd. near 57 Ave. $400,000.

▲ **N. Y., Manhasset**—HOSPITAL—North Shore Hospital c/o Isidore Rosenfield, archt., 23 W. 47 St., New York 19, N. Y. 150-bed general hospital, on 12 acre site. $3,000,000.

N. Y., New York—APARTMENT—Hamber Realty Corp., c/o Henry G. Harris, archt., 305 Broadway, Zone 7, 6 story apartment, 1376-1378 Lexington Ave., southwest corner of 91 St. $400,000.

▲ **Pa., Morrisville**—HOMES, SHOPPING CENTER, etc.—Danherst Corp., Gordon K. Bolon, R.F.D. No. 2, Langhorne, plans by Richard L. Tully, 582 Oak St., Columbus, O., 3,500 prefabricated and conventional type homes on 1,700 acre tract near U. S. Steel Mill (Falisington-Hulmeville Rd.) incl. shopping center, community bldgs., schools, churches, WW, and sewage disposal facilities, Falls Twp. $35,000,000. Seward H. Mott, 1737 K St. N.W., Wash., D. C., consult. engr. CD 4/18.

▲ **R. I., Providence**—GYMNASIUM—Providence College, Very Rev. R. J. Slavin, O.P. pres., River Ave., plans by Eggers & Higgins, 100 E. 42 St., New York, N. Y., 3 story, bsmnt., 190x235 ft. brick Indiana limestone gymnasium, large glass frontage on south side. $1,500,000. CD 1/6/47.

▲ **Tenn., Nashville**—COLLEGE BLDGS.—David Lipscomb College, Granny White Pike, plans by George D. Waller, 3rd Natl. Bank Bldg., 3 addnl. college bldgs. $1,850,000.

Tenn., Nashville—OBSERVATORY—Vanderbilt University, Nashville, plans by Clarence T. Jones, James Bldg., Chattanooga, observatory. Approx. $300,000.

Tex., Bellaire—BANK—Bellaire State Bank, Bellaire, plans by Lloyd & Morgan, 4605 Montrose St., Houston, 2 story bsmnt. bank. $300,000. Cost reduced. CD 8/10/50.

Tex., Bellaire—DWELLINGS—S. W. Bennett Constr. Co., Bellaire, 33 masonry, frame dwellings, concrete slab fdn. $495,000.

Tex., Bellaire—DWELLINGS—Kris Hubert, 6307 Washington Ave., Houston, 25 brick, frame dwellings, concrete slab fdn., edge of Bellaire. $375,000.

▲ **Tex., Fort Worth**—HOSPITAL—W. L. Cook Memorial Hospital, 1212 Lancaster St., childrens hospital and medical center. $4,000,000.

Tex., Fort Worth—HOUSING—C. Allen True, c/o True-acres, Fort Worth, frame housing, concrete slab fdn. in True Acres. $325,000.

Tex., Houston—RESIDENCES—Bering & Jax Constr. Co., 7206 Capitol St., 10 addnl. 1 and 2 story masonry addnl. high-class residences, in an area of Tanglewood zone.

Tex., Houston—DWELLINGS—Paul E. Canto, 312 Hyde Park St., Houston, 20 brick dwellings, concrete slab fdn. on part of Seminole St. $350,000.

Tex., Houston—DWELLINGS—Hollywood Constr. Co., c/o Jolley, Allen & Seaman, Scanlan Bldg., 12 addnl. 1 and 2 story brick, hollow tile dwellings, concrete slab and beam fdn. in new area Tanglewood zone. $365,000.

Tex., Houston—RESIDENCES—Kelly & Kelly, 5408 Kirby Dr., 16 addnl. brick, stucco, hollow tile residences, concrete beam and pier fdn. in Tanglewood zone. $450,000.

Tex., Houston — DWELLINGS — Warren Settegast, 1st Natl. Bank Bldg., 20 masonry addnl. dwellings, concrete slab and pier fdn., just beyond Strey Lane. $475,000.

Tex., Houston—DWELLINGS—Hugh Wilkin, 2302 Danville St., 10 addnl. 1 and 2 story masonry dwellings, concrete pier and beam fdn., in Sect. 2 of Braes Terrace, $400,000.

Tex., Pasadena — SHOPPING CENTER — San Jacinto Homes, Inc., 6115 LaSalle St., Houston, plans by Woodrow Alexander, 2008 W. Alabama Ave., Houston, 1 story masonry shopping center, air-conditioning, Thomas Ave. and Tatar St. $325,000.

Tex., San Antonio—SANCTUARY, EDUCATIONAL—Aldersgate Methodist Church, Kayton Ave. and S. Palmetto St., plans by Henry Steinbomer, 912 Travis Bldg., masonry sanctuary and educational. $450,000.

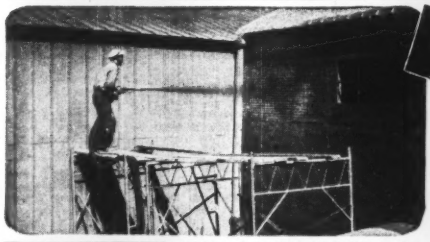
Tex., San Antonio—DWELLINGS—Wm. Ochse, Alamo Natl. Bldg., plans by E. I. Freeborn, 2806 Main Ave., 30 frame dwellings, slab fdn., etc. $300,000.

Tex., Victoria—FOOD MARKET, etc.—H. A. Jamison & Assoc., Victoria, plans by Jordan C. Ault & Assoc., 604 E. Goodwin Ave., 120x300 ft., brick food market and mercantile, concrete slab fdn. $304,000. CD 5/9.

Va., Lynchburg—DORMITORY—Lynchburg College, Lynchburg, girls dormitory. Approx. $300,000.

Alaska, Ketchikan — APARTMENT — Louise Co., Inc., Ketchikan, plans by Stuart & Durham, 1100 Denny Way, Seattle, Wash., 4 story apartment. $300,000. CD 5/2.

▲ **B. C., Burnaby**—SUPER MARKET—Kelly Douglas & Co., Ltd., Burnaby, food super market. $1,000,000.



Wow! New Opportunities . . . New Profits for You

with the **BONDACTOR**

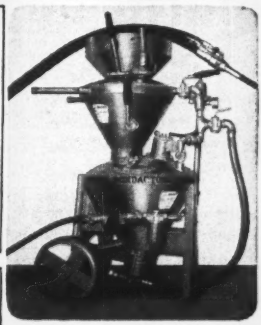
Whether You Call It

• SHOT CONCRETE • AIR PLACED CONCRETE
• PNEUMATICALLY PLACED CONCRETE

You Can Do It Better . . . More Profitably with BONDACT Process Equipment

One of many uses is the application of Vermiculite concrete for insulation and fireproofing by a BONDACTOR, as shown here. Nozzleman is using the BONDACT Gun.

Model 1000 BONDACTOR inset at right.



Expand and Profit with BONDACTOR These 2 Ways

1. New Construction

Construction with the BONDACTOR is easier, faster, better. It costs less to build . . . and you profit more. *You* get the big savings in time, labor, money . . . and *you* keep the profits. What's more, you can take advantage of new methods and designs . . . and you can build without the use of many critical materials.

2. Repair and Maintenance

One unit does the whole job. Use the BONDACTOR for sandblasting, application of sand and cement concrete; insulating (Vermiculite and Perlite) concrete and plaster scratch coats; pumice concrete; refractories, including Haydite and Lumnite cement, ganister and fire clay, castable refractories; and other aggregates and materials.

Available to Meet Your Needs

Model #1000-S BONDACTOR Operates with a 105 CFM or larger air compressor.

Model #1000-L BONDACTOR Operates with a 210 CFM or larger air compressor.

See Your Construction Equipment Distributor, or for FREE Catalog, Tear Off and Mail Coupon TODAY

AIR PLACEMENT EQUIPMENT CO.
2523 Southwest Blvd., Kansas City 8, Mo.

To Save and Profit with the BONDACTOR, Act Now!

AIR PLACEMENT EQUIPMENT CO.
2523 Southwest Blvd., Kansas City 8, Missouri

Without obligation, please send me full information about BONDACTOR equipment.

Name_____

Firm_____

Address_____

City_____ State_____

▲ **B. C., Burnaby**—STORE, etc.—Robert Simpson Ltd., 367 Water St., Vancouver, department store and mail-order distributing centre. $2,000,000.

INDUSTRIAL BUILDINGS

Calif., Orange—FACTORY—National Cotton Mills, Stanton, 40,000 sq. ft., concrete factory. $250,000. William J. Moran Co., 1011 S. Fremont Ave., Alhambra, consult. engr.

▲ **Calif., Santa Monica**—LABORATORY—Rand Research & Development Co., 1500 4 St., plans by H. Roy Kelley, 3723A Wilshire Blvd., Los Angeles, 1 and part 2 story research laboratory. $12,500,000.

▲ **Colo., Denver**—FACTORY—Armco Drainage & Metal Products Inc., Hardesty Div., 3033 Blake St., factory in vicinity E. 60 St. and Colorado Blvd. $1,000,000.

Fla., Panama City—PLANT—Arizona Chemical Co., Panama City, rebuild plant. Approx. $300,000.

▲ **Ind., Mishawaka**—POWER PLANT—United States Rubber Co., 1230 Ave. of Americas, New York, N. Y., power plant, $3,000,000. Boddy-Benjamin Assocs., Inc., 2210 Park Ave., Detroit, Mich., consult. engrs.

Ind., Richmond—PLANT—Perfect Circle Corp., Hagerstown, castings plant, $350,000; piston ring machining plant addn., $250,000.

Ia., Des Moines—WAREHOUSE, etc.—Watson Bros. Transportation Co., 802 S. 14 St., Omaha, Neb., warehouse and terminal bldg. $100,000.

La., Baton Rouge—NEWSPAPER—State Times & Morning Advocate, 352 Florida St., plans by Bodman & Murrell, 1175 Nicholson Dr., 4 story, 54,000 sq. ft. newspaper bldg.

Mass., Worcester—MANUFACTURING—Independent Plating Co., 175 Union St., rebuilding mfg. bldg. $150,000.

Mo., St. Louis—FREIGHT TERMINAL—Nighthawk Freight Services, Inc., 811 Park Ave., Zone 4, 1 story, 50x140 ft., freight terminal, incl. dock, offices, garage, repair shops, etc. 23 and Papin Sts.

N. Y., Brooklyn—FACTORY—A. & A. Machinery Corp., 1267 Flushing Ave., Brooklyn Zone 6, plans by Irving P. Marks, 44 Court St., Zone 2, 1 story machinery factory, 36-44 Cypress Ave. $120,000.

N. Y., Brooklyn—SERVICE STATION—P. J. Clarkin & D. G. Campbell, 335 Gold St., Zone 1, plans by William J. Minogue, 17 E. 42 St., New York, Zone 17, altering 2 story auto service station and salesrooms 327-41 Gold St. $150,000.

N. Y., Forest Hills—WAREHOUSE—McKesson & Robbins, Inc., 155 E. 44 St., New York Zone 17, warehouse, Metropolitan Ave., Trotting Course Lane and 73 Ave. $702,500.

N. Y., Idlewild—SHOP—Green Bus Lines, 148-02 147 Ave., South Ozone Park, plans by Saul Goldsmith, 80 Livingston St., Brooklyn Zone 2, 270x397 ft. repair shop and garage, 147 Ave. and 167 St. $500,000.

Okla., Tulsa—PLANT—Unit Rig & Equipment Co., Archer and Elwood Sts., plans by M. P. Buck, Bartlesville, plant addn. $150,000. Collins & Gould, McBirney Bldg., consult. engrs.

S. C., Charleston—PLANT—Cream Crest & Dixie Dairies, c/o James G. Sherrer, 578 Meeting St., Charleston, dairy plant. Approx. $100,000.

▲ **Tex., Belton**—GENERATING PLANT—Rural Electrification Assn., Belton, construct 3rd unit steam electricity generating plant. $2,000,000.

Tex., Corsicana—FACTORY—Texas Millers Products, Corsicana, reconstruction hat mfg. factory. Approx. $300,000. J. A. Pitzinger, 1012 Southland Life Bldg., Dallas, consult. engr. and archt. CD 4/20.

Tex., Dallas—PLANT—National Container Corp. (subsidiary of National Container Corp. of Texas) Tower Petroleum Bldg., plant to fabricate corr. paper and solid fibre board containers. $600,000.

Tex., Trinity—PLANT—Trinity Clay Products Co., c/o Jay Simmons, Republic Bank Bldg., Dallas, clay products plant. $250,000.

Va., Cleveland—CHEMICAL PLANT—American Cynamid Co., 30 Rockefeller Plaza, New York, N. Y., chemical plant. Approx. $100,000.

Wash., Aberdeen—MILL—Bryan Shingle Co., rebuild shingle mill, $100,000.

Wash., Seattle—WAREHOUSE—Broker's Warehouse Co., c/o Industrial Storage & Transfer Co., 1043 6 Ave. S., plans by J. L. Skoog, 105 2 Ave. N., 2 story, 120x198 ft., rein.-con. warehouse, $150,000. CD 5/1.

Wash., Seattle—WAREHOUSE—Howard S. Wright & Co., 407 Yale Ave. N., warehouse for constr. materials, $160,700.

▲ **B. C., Salmo**—MINE IMPRVS., etc.—Consolidated Mining & Smelting Co., 215 St. James St. W., Montreal, Que., H. B. mine imprvs., addns., near here. $2,750,000.

▲ **Man., Winnipeg**—MINING DEVELOPMENT—Sheritt Gordon Mines Ltd., 25 King St. West, Toronto, Ont., program for nickel-copper property at Lynn Lake in Northern Manitoba, Approx. $10,800,000.

▲ **Que., Beauharnois**—PLANT EXPANSION—St. Lawrence Alloys & Metals Ltd., Beauharnois, plant expansion program. Approx. $3,000,000.

Que., Three Rivers—FACTORY—Ilse Hoffman, c/o Industrial Comn., City Hall, Three Rivers, textile factory, Blvd. des Recollets, $100,000.

UNCLASSIFIED

Alabama—RURAL DISTRIBUTION LINES—Cullman Electric Co-operative, Cullman, electric distr. line and sys. imprvs., Cullman Co. $345,000.

▲ **Florida and Alabama**—GAS PIPE LINE—United Gas Pipeline Co., 1525 Fairfield Ave., Shreveport, La. 39.4 mi. 16 in. gas line from existing lateral at Pensacola, Fla., to point in Baldwin Co., Ala. $1,945,000.

▲ **Illinois**—COAL MINE DEVELOPMENT—Bransford Fuel Co., c/o Vaden Lackey, Stahlman Bldg., Nashville, Tenn., development coal mine, incl. tipple and other structures on 3000 acre tract near Old Shawneetown, Approx. $3,500,000.

Maine — RURAL DISTRIBUTION LINES — Farm-Home Electtric Co-operative, Patten, 16 mi. rural distr. lines, sys. imprvs., Aroostock Co. $125,000.

▲ **Mo., Kansas City**—YARDS—Missouri Pacific R. R. Co., W. H. Hobbs, ch. engr., Missouri Pacific Bldg., St. Louis 3, Mo., expansion, modernization Northeast Industrial Dist. yards on 35 acre tract, $2,000,000.

New Mexico—GAS PIPE LINE, etc.—Southern Union Gas Co., Burt Bldg., Dallas, Tex., 10 mi. 8¾ in. gas pipe line Portales to Clovis, $77,760; 300 hp. compressor station, near Clovis, $125,000.

Okla., Tonkawa—STADIUM—Northern Oklahoma Junior College, Tonkawa, athletic stadium, $100,000.

South Carolina—RURAL DISTRIBUTION LINES—Newberry Electric Co-operative, Newberry, 75 mi. rural distr. lines, and sys. imprvs., Newberry Co. $215,000. CD 7/1/49.

South Dakota — RURAL DISTRIBUTION LINES — Bon Homme-Yankton Electric Assoc., Tabor, 222 mi. rural distr. lines, Bon Homme Co. $387,000.

South Dakota—RURAL DISTRIBUTION LINES—Cherry-Todd Electric Co-operative, Valentine, Neb., 397 mi. rural distr. lines, 43 mi. 34.5 kv transmission line and sys. imprvs., Todd Co. $719,000.

▲ **Texas**—OIL PIPE LINE—Service Pipe Line Co., Philtower Bldg., Tulsa, Okla., crude oil pipe line gathering sys. at Haskell, Haskell and Stephens Counties, $150,000; 65 mi. new crude oil pipe line gathering sys., Throckmorton and Shackelford Counties, $175,000; crude oil gathering lines, in adjacent fields, Stonewall Co., $100,000; 100 mi. 8 and 10 in. crude oil pipe line from Old Glory area to Bowie, Stonewall Co. $1,980,000.

Tex., Greenville—LIGHTING SYSTEM—Town, extens., imprv. electric lighting sys. $300,000. Freese & Nichols, 407 Daniciger Bldg., Fort Worth, consult engrs.

W. Va., Blair—SPUR RAILROAD—Chesapeake & Ohio Ry. L. K. Nuckols, ch. engr., (Chesapeake Dist.), 823 E. Main St., Richmond, Va., spur railroad from Blair to Guyan Eagle Coal Co., $307,000.

COMPARE CHALLENGE truck mixers with any other major mixer...

ON YOUR OWN JOB
IN YOUR OWN PLANT
WITH YOUR OWN CREW

Challenge Truck Mixers are as far out in front in performance as they are in lighter weight, lower costs, and appearance. That is because the day of building a mixing unit to accomplish a general objective is long past. Challenge Mixers are designed and engineered to *improve* on every phase of operation, performance, quality of product, and costs...the greatest engineering advancement in mobile mixing equipment in cement history. If you have any doubt about the advantages of this modern, streamlined unit, you owe it to yourself to investigate... NOW!

COOK BROS. EQUIPMENT CO.
Please send complete information on Challenge Truck Mixers together with name and address of nearest Challenge dealer where we can arrange for demonstration.
NAME_____
ADDRESS_____
CITY_____STATE_____

COOK BROS. EQUIPMENT CO.
EXCLUSIVE NATIONAL DISTRIBUTORS FOR
CHALLENGE
the modern, streamlined truck mixers
MEMBER NATIONAL READY-MIXED CONCRETE ASSOCIATION
1815 N. Broadway, Los Angeles 31, Cal. Phone CApitol 2-9111

Complicated DEEP IN THE HEART OF NEW YORK CITY

Waterside No. 1 Generating Station, for Consolidated Edison Company of New York, Inc., designed by Consolidated Edison Company.

Straight-forward OUT IN NOBLESVILLE, IND.

Noblesville Power Station, Noblesville, Indiana, Public Service Company of Indiana, Inc. Designed by Sargent & Lundy.

You can depend on American Bridge to build it right!

THE pictures above give you a pretty good idea of American Bridge Company's versatility. We fabricated and erected all steelwork for both power plants.

The reconstruction of Consolidated Edison's Waterside No. 1 Generating Station in a congested area of New York City involved a number of out-of-the-ordinary working problems. It called for complete new steelwork for the boilerhouse and west electrical gallery buildings, new turbine foundations, and new bus tie between the east and west galleries. These necessitated complicated shoring and alterations, and the skillful maneuvering of heavy girders and construction equipment.

American Bridge Company has the know-how and experience, plus the men and equipment to handle either type of job speedily and economically. Just call our nearest Contracting Office.

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

Contracting Offices in: AMBRIDGE · BALTIMORE · BOSTON · CHICAGO · CINCINNATI
CLEVELAND · DENVER · DETROIT · DULUTH · ELMIRA · GARY · MINNEAPOLIS · NEW YORK · PHILADELPHIA · PITTSBURGH
PORTLAND, ORE. · ST. LOUIS · SAN FRANCISCO · TRENTON · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

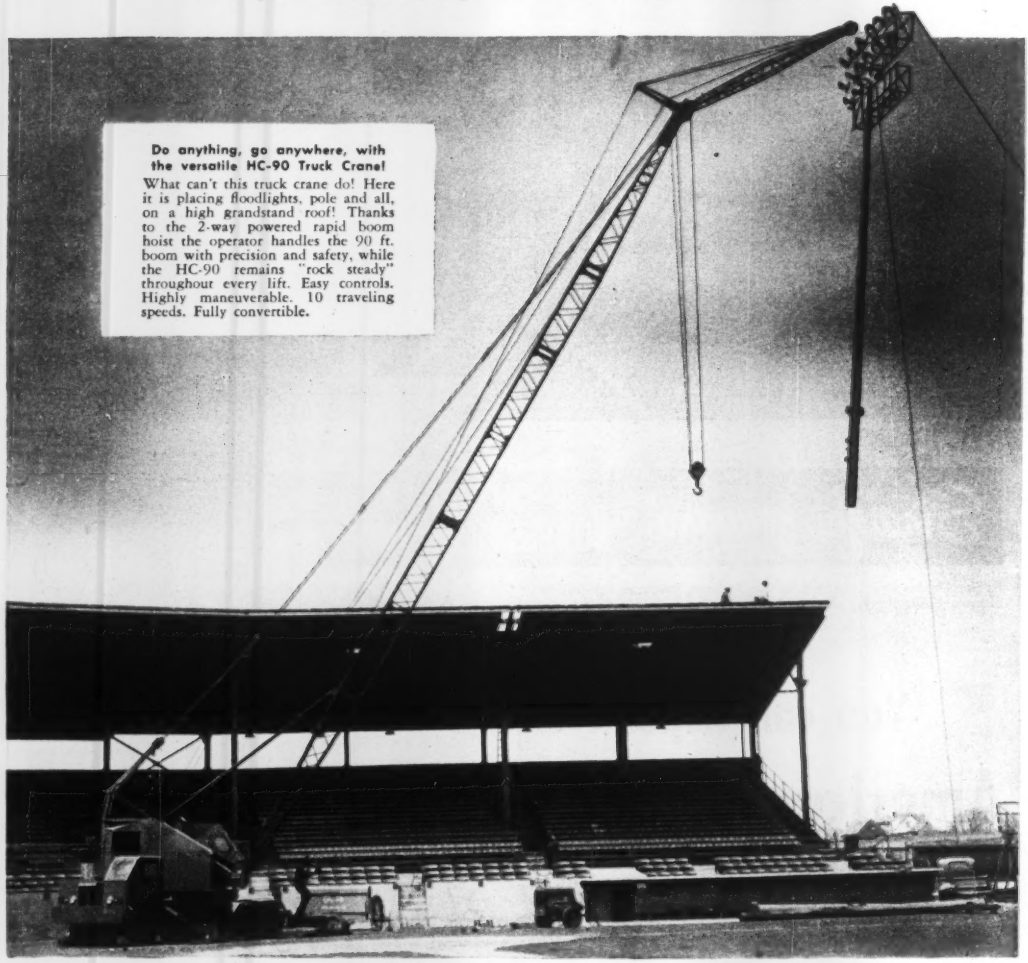
USS

AMERICAN BRIDGE

UNITED STATES STEEL

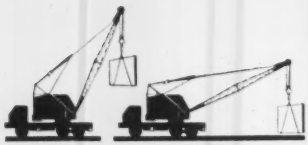
Power up . . . *and power down*

As you BOOM. As you HOIST. As you SWING.



Do anything, go anywhere, with the versatile HC-90 Truck Crane!

What can't this truck crane do! Here it is placing floodlights, pole and all, on a high grandstand roof! Thanks to the 2-way powered rapid boom hoist the operator handles the 90 ft. boom with precision and safety, while the HC-90 remains "rock steady" throughout every lift. Easy controls. Highly maneuverable. 10 traveling speeds. Fully convertible.



LINK-BELT SPEEDER

It's the "down" that's important! That's when you need absolute control, smoothly variable speed, positive safety.

You get all three in Link-Belt Speeder. For the Independent Rapid Boom Hoist is independent of all other operations. It can be operated up or down under power independently of or simultaneously with other machine operations. The load moves smoothly. No jerks, no slips. You can inch it along or whiz it up and down . . . spot it on a dime! And for *extra* safety, there's a safety locking pawl and friction brake.

Many other features make Link-Belt Speeders outstanding for high production, low-cost performance.

LINK-BELT SPEEDER
CORPORATION

12.458

Builders of the most complete line of shovels, cranes and draglines
CEDAR RAPIDS, IOWA

CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
June 5, 12 Massachusetts

BIDS ASKED—BUILDINGS

† **Conn., New London**—BUILDING REHABILITATION—B.A. 5/31—Pub. Wks. Office, Third Naval Dist. Federal Office Bldg., 90 Church St., New York 7, N. Y., alterations, repairs to Bldg. 27, U. S. Navy Underwater Sound Laboratory, Fort Trumbull, NOY 26076, Spec. 28176. Plans deposit $10.

Mass., Northampton—SCHOOL—B.A. 6/1—City, School Dpt., 380 Elm St., Jackson Street Elementary School, $350,000, Englehart, Englehart & Liggett, W. 250 St. and Fieldston Rd., New York, N. Y., archts. and engrs. CD 6/19/50.

LOW BIDDERS—BUILDINGS

▲ **Etcoff Constr. Co.**, 1318 Beacon St., Brookline, Mass. Low Bidder, $1,145,720. Consolidated School, Wilder Field, Waterford St., GARDNER, MASS. City, City Hall, Gardner, Mass. Bids May 8. CD 5/2.

▲ **Construction Units, Inc.**, 294 Washington St., Boston, Mass. Low Bidder. $2,086,000. veterans' HOUSing Proj. 200-2, Hancock St., LAWRENCE, MASS. City of Lawrence Housing Auth., 90 Broadway, Lawrence, Mass. CD 5/8.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 29 Maryland
STREETS AND ROADS
May 29 Maryland

† **Md., White Oak**—B.A. 5/29—Pub. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., installation of pond for acoustic test work, excav. for dam and pond along existing creek, south of Admin. Bldg., Naval Ordnance Laboratory, Noy 27428, Spec. 29342. Plans deposit $10. CD 7/26/38 under public bldgs.

D. C., Wash.,—B.A. 6/5—Govt. of Dist. of Columba, Director Sanitary Engineering, District Bldg., 14 and E Sts. N. W., Zone 25, outlet structure and Sect. 1 of East Branch, Piney Branch Trunk Sewer, vicinity of 16 St. and Piney Branch Parkway N. W. Plans deposit $25. CD 7/14/44.

† **N. Y., Mitchel Air Force Base**—FACILITIES—B.A. 6/6—U. S. Eng., 80 Lafayette St., New York, Zone 13, airport surveillance and ground control approach facilities, Eng., 30-075-51-639. $100,000-$200,000. Plans deposit $5.

▲ **N. J., Elizabeth**—B.A. about 6/15—City sewage disposal plant to eliminate pollution of Arthur Kill. $4,000,000. CD 3/31/44.

BIDS ASKED—BUILDINGS

N. Y., Hempstead—HIGH SCHOOL—B.A. 5/28—Bd. Educ., Union Free School Dist. 1, Hempstead, high school addns., alterations 70 Greenwich St. $375,000. CD 2/15/46.

N. Y., New York—HOSPITAL—B.A. 5/28—Dpt. P. Wks., Municipal Bldg., Zone 7, Contr. 3, general const.; Contr. 4, plumbing Contr. 5, heating, ventilating and refrigeration; Contr. 6, electrical work and lighting fixtures for construction of East Harlem General Hospital (Metropolitan Hospital Replacement) 97 to 99 Sts., 1 to 2 Aves., Manhattan Boro. Plans deposit $100. Extended date. CD 5/4.

N. Y., Beacon—SCHOOL—B.A. 5/29—Bd. Educ., Beacon, James V. Forrestal school. $944,000.

Pa., Phila.—WAREHOUSE—B.A. 5/29—General State Auth., 18 and Herr Sts., Harrisburg, warehouse at Philadelphia (Byerly) State Hospital. $800,000. Plans deposit $15. Engineering Consultants, 843 N. 19 St., Zone 30, engrs. CD 6/15.

Pa., Fayette Twp. (Thompsontown P. O.)—SCHOOL—E.A. 6/1—State Public School Building Auth., 1400 N. Cameron St., Harrisburg, secondary school for East Juniata Joint School Bd. $464,000. Plans deposit $30. E. G. Good, Jr., 904 N. 2 St., Harrisburg, archt. C. R. Griener, c/o owner, ch. engr.

Pa., Hyndman—SCHOOL—B.A. 6/1—Public School Building Auth., 1400 N. Cameron St., Harrisburg, secondary school for Hyndman-Londonderry Joint School Dist. Plans deposit $25. Hunter, Caldwell & Campbell, 3601 5th Ave., Altoona, archts. C. E. Griener, c/o owner, ch. engr. CD 5/1.

▲ **N. J., Lawrenceville**—SCHOOL—B.A. 6/4—Lawrence Twp. Bd. Educ., Craven Lane, Lawrenceville, 2 story, 48,000 sq. ft., brick, structural steel, rein.-con. Junior High School, $1,050,000. Plans deposit $25. Mickle-wright & Mountford, 72 Ewing St., Trenton, archts. CD 2/2/48.

Pa., Media—COURT HOUSE, GARAGE—B. A. 6/5—Comrs. Delaware Co., Media, court house annex, garage addn. $500,000. G. Morris Whiteside, 2nd., Sharon Hill, archt. CD 11/22.

Pa., Carlisle—HOUSING—B.A. About 6/7—U. S. Eng., P. O. Box 8629, Phila., Zone 1, construct, manage, finance, 100 single 3-bedroom dwelling units, Inv. No. Eng 36-109-51-39. Plans deposit $10. CD 2/14.

N. J., Rockaway—SCHOOL—B. A. 6/7—Morris Hills Regional Bd. of Educ., Rockaway, consolidated high school for Denville, Wharton, Rockaway Boros and Rockaway Twp. on Rockaway Dover Rd., on 30-acre tract, $880,000. Plans deposit $25. Alexander Merchant & Son, 1 Elm Row, New Brunswick, archts. CD 10/13.

Pa., New Cumberland—HOUSING—B.A. About 6/8—U. S. Eng., P. O. Box 8629, Phila. Zone 1, construct, manage, finance, 12 buildings, providing total of 25 dwelling units of 3-bedrooms each and 25 dwelling units of 2-bedrooms each, one laundry bldg. Plans deposit $10. CD 2/13.

N. Y., New York—POWER EQUIPMENT—B.A. 6/8—Bd. Transportation, 370 Jay St., Brooklyn, Zone 1, furnishing, installing main power equip. for the 74th Street Power Plant.

† **N. Y., Flushing**—POST OFFICE—B.A. 6/11—Pub. Bldgs. Service, 250 Hudson St., New York, Zone 13, alterations, repairs to U. S. Post Office, 41-65 Main St. Extended date. CD 11/13/45.

† **N. Y., Castle Point**—CONNECTING CORRIDOR—B.A. 6/12—Veterans Admin. Munitions Bldg., Wash. D. C., Connecting Corridor No. 19-20, elevator hoistway and electric passenger elevator for Veterans Admin. Hospital, incl. tunnel between new corridor and existing tunnel, road, grading, plumbing, heating, electrical work, outside services, etc. Spec. No. 5166, Proj. No. 2-4156.

† **N. Y., Stapleton**—HOSPITAL REPAIRS—B.A. 6/12—Pub. Bldgs. Service, 250 Hudson St., New York Zone 13, repairs to U. S. Marine Hospital. $8,000. Extended date. CD 4/6.

▲ **N. J., Trenton**—HOUSING—B.A. About 6/15—Trenton Housing Auth., 875 New Willow St., 10 three-story, brick apartments, incl. 219 units, Mellon St., Coolidge and Eisenhower Aves., $2,500,000. Plans deposit $25. Micklewright & Mountford, 72 Ewing St., archts. CD 5/19/50.

† **N. J., Asbury Park**—POST OFFICE REPAIRS—B.A. 7/3—Pub. Bldgs. Service, 250 Hudson St., New York 13, N. Y., misc. repairs to U. S. Post Office. Extended date. CD 4/2.

† **N. Y., Whitehall**—POST OFFICE—B.A. 7/6—Pub. Bldgs. Service, 250 Hudson St., New York 13, general repairs at U. S. Post Office. Extended date. CD 4/10.

† **N. Y., Niagara Falls**—POST OFFICE—B.A. 7/12—Pub. Bldgs. Service, 250 Hudson St., New York 13, N. Y., misc. repairs to U S Post Office. Extended date. CD 4/11.

SOON LETS CONTRACT—BUILDINGS

▲ **Pa., Phila.**—HOSPITAL—Lankenau Hospital, Corinthian and Girard Aves., soon lets contract hospital, Overbrook. $6,000,000. Vincent G. Kling, 917 Corinthian Ave., archt. CD 8/4/49.

▲ **Pa., Morton**—PLANT—Piasecki Helicopter Corp., 100 Woodland Ave., soon lets contract plant expansion. $2,000,000. Rosengarten & Kraemer, Old Broad St. State Bldg., Phila., engrs. and archts. CD 1/12.

LOW BIDDERS—BUILDINGS

▲ **Car-Dyce Co.**, Farrell, Pa. Low Bidder. Approx. $2,000,000. tube MILL and OFFICE bldg., 2 bldgs., 75x365 ft. brick, steel constr., SHARON, PA. Sharon Tube Co., Sharon, Pa. CD 4/10.

CONTRACTS—HEAVY CONSTRUCTION

John F. Lafferty, Chapel Ave., Haddonfield, N. J. Contract Awarded. $513,182, road constr. and sewer constr. Broadway, etc., CAMDEN, N. J. Bd. Freeholders, Camden Co., Court House, Camden, N. J. S. Herbert Taylor, co. engr. CD 7/26/46.

▲ **Kingston Bituminous Products Co.**, Kingston, N. J., Contract Awarded. Approx. $1,000,000. construct 12 mi. roads and 250,000 sq. yd. parking area at new Fairless Works, 2 in. of asph. on 12 in. stone base, MORRISVILLE, PA. U. S. Steel Co., 435 5 Ave., Pittsburgh, Pa.

CONTRACTS—BUILDINGS

▲ **Kalon Homes, Inc.**, c/o Schulman & Saloway, archts., 100-15 Queens Blvd., Forest Hills, N. Y. Owner Builds. $1,000,000. 45 one family HOUSES on tract at Frisco Ave. and Reads Lane, FAR ROCKAWAY, N. Y.

Del Balso Constr. Co., 500 Zerega Ave., New York 61, N. Y. Low Bidder, $672,000 (unofficial). imprv. parks, along west side 1st Ave. between E. 41 and E. 43 Sts., incl. stairways, incl. incidental work in connection with construction of a tunnel in 1st Ave. in vicinity of United Nations site with ramp approaches, etc. between E. 40 and E. 49 Sts., NEW YORK, N. Y. President Manhattan Boro, Municipal Bldg., New York 7, N. Y. Bids May 15. CD 5/7.

East Glen Gardens Homes, c/o Rudolph L. Novak, archt., 713 Main Ave., Clifton, N. J. Owner Builds. $700,000. 74 one family HOUSES on 30 acre tract, Midland Ave. between Paramus Rd. and Rte. 17, PARAMUS, N. J.

▲† **Daniel J. Cronin, Inc.**, 717 S. Grange Ave., Newark, N. J., Contract Awarded. $6,500,000, test facilities, incl. high pressure BLOWER, TEST WING AND REFRIGERATION WING, etc. at Navy's Aeronautical Turbine laboratory, TRENTON, N. J. Dpt. Navy, 18 St. and Constitution Ave. N. W., Wash. 25, D. C. Bids Apr. 25. CD 5/2, under LB.

▲ **Westmoreland Constr. Co.**, P. O. Box 32, Greensburg, Pa., Contract Awarded. Approx. $2,189,510. 3 and 7 story bsmnt., steel, brick HOSPITAL addn., GREENSBURG, PA. Westmoreland Hospital Assoc., Greensburg, Pa. CD 2/20, under LB.

▲ **Hild Real Estate**, 5043 Frankford Ave., Phila., Pa. Separate Contracts. Approx. $1,080,000. RESIDENTIAL DEVELOPMENT, Aberdale St., etc., PHILA., PA. H. Stanley Atkinson, 10 S. 18 St., Phila., Pa., archt.

R. M. Shoemaker, 1619 Sansom St., Phila., Pa. Contract Awarded. $800,000. 2 story brick, steel 48x68 ft. PLANT alterations, addn., PHILA., PA. L. H. Gilmer Co., 1230 Avenue of the Americas, New York, N. Y. A. R. Ullrich, c/o owner, engr. and archt.

Ragnar Benson, 239 4 Ave., Pittsburgh, Pa. Contract Awarded. Approx. $500,000. asph. tile MFG. PLANT, Stowe Twp. PITTSBURGH, PA. Hachmeister, Inc., 2332 Forbes St., Pittsburgh, Pa. Bids Apr. 24. CD 4/19.

Superior Builders, Inc., 514 St. Paul St., Baltimore, Md. Contract Awarded. $800,000. eighty 2 story, bsmnt., 27x31x25 ft., brick, concrete, block RESIDENCES, near BALTIMORE, MD. The Ace Constr. Co., 514 St. Paul St., Baltimore, Md.

Henry A. Knott, Inc., 2107 N. Charles St., Baltimore, Md. Contract Awarded. $656,810. Central High SCHOOL, ELLICOTT CITY, MD. Howard Co. Bd. Educ., Ellicott City, Md. CD 5/4, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
June 8 Georgia June 13 Louisiana
June 26, Florida
STREETS AND ROADS
May 30, June 13 Louisiana

† **Fla., Orlando**—BARRACKS, etc.—B.A. 5/29—U. S. Eng., 575 Riverside Ave., Jacksonville, barracks and mess halls Pinecastle Air Force Base Eng. 08-123-51-24. Plans deposit $15. Extended date. CD 5/3.

Kentucky—RURAL DISTRIBUTION LINES—B.A. 5/29—Farmers Rural Electric Co-operative, Glasgow, 7.15 mi. 69 KV rural distr. lines, Barren Co. Plans deposit $10, Patterson & DeWar, Rutland Bldg., Decatur, Ga., engrs. CD 6/16/50.

† **N. C., Cherry Point**—RUNWAYS—B.A. 5/29—Dpt., Navy Officer in Charge of Construction, P. O. Box 365, Naval Base, Charleston, S. C., runway exten. for jet operations at Cherry Point Marine Corps Air Station, NOY 23453, Spec. 25820. Plans deposit $50.

† **N. C., Cherry Point**—FUEL STORAGE—B.A. 5/29—Dpt. Navy, Officer in Charge of Construction, P. O. Box 365, Naval Base, Charleston, S. C., jet fuel storage station, incl. concrete fdns., pumps, piping, new discharge lines, new steel pier for cargo vessels and unloading facilities at Cherry Point Marine Corps Air Station, NOY 26797, Spec. 28813. Plans deposit $20.

N. C., Shelby—B.A. 5/29—City, WW imprvs., addns. to raw water and filtered water supply sys. Plans deposit $35. J. N. Pease & Co., Inc., 119½ E. 5 St., Charlotte, engr. CD 4/27.

† **N. C., Fort Bragg**—FIELD HOUSE—B.A. About 5/31—U. S. Eng., 308 Customhouse, Wilmington, furnishing, installing addnl. filtration equip. at new field house, Inv. No. Eng 31-075-51-11.

† **Virginia**—B.A. About 5/31—U. S. Eng., First and Douglas Sts., N. W. Wash. 25, D. C., construction of Local Flood Protection Proj., 9,000 cu. yd. channel excav., 1,000 cu. yd. structural excav., 70,000 cu. yd. borrow excav., 7 acres topsoil and seeding, near confluence of North and Dry Rivers at Bridgewater, Rockingham Co., Serial No. CIVENG 49-080-51-65. Plans deposit $5.

N. C., Marion—B.A. 5/31—City, C. Frank Goldsmith, mayor, and Town Council, Town Hall, outfall and collection sewers, sewage and waste disposal plant, 1 m.g.d. capacity. Plans deposit $25. The Harwood Beebe Co., Spartanburg, S. C., engr. CD 4/9.

Ky., Paducah—AIRPORT IMPRVS.—B.A. about 6/1—Paducah Airport Comn., airport imprvs. $200,000, Johnson & Crittenden, Paducah, archts. CD 2/2.

Ala., Mobile—BERTHS—B.A. About 6/1—State Dpt. Docks & Terminals, State Docks, Mobile, Berths 1, 2 and 3. Approx. $500,000. J. B. Converse & Co., P.O. Box 1084, Mobile, engrs. CD 4/13.

† **Ga., Macon**—WAREHOUSE, etc—B.A. 6/1—Dpt. Army & Air Force, National Guard, Dobbins Air Force Base, Marietta, warehouse-vehicle storage bldg. on Georgia National Guard Reservation.

† **Louisiana**—B.A. 6/1—U. S. Eng., foot of Prytania St., New Orleans, 180,000 cu. yd. embankment, installation metal culverts at Morganza Control Structure, Inv. 51-204. CD 6/26/46.

† **Louisiana**—B.A. 6/1—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, approx. 1,535 lin. ft. pile dikes

bank of Red River approx. 1 mi. upstream from Echo, CIVENG 16-047-51-206, Avoyelles Parish. CD 6/26/46.

La., New Orleans—B.A. 6/1—City, Comn. Council, Dpt. P. Finances, George R. Bosworth, purch. agt., overpass at S. Broad Ave. over New Orleans Union Passenger Terminal, Louisiana, Arkansas & Illinois Central tracks. Plans deposit $100, G. A. Heft & Co., 820 Union St., consult. engrs. CD 4/26.

† **Fla., Key West**—PIER—B.A. 6/4—U. S. Naval Base, Charleston, S. C., pier, incl. 3,000 lin. ft. steel piling, 1300 tons concrete trench, 5000 sq. yd. asph. paving, 2,000 lin. ft. concrete cap and curb, Key West Naval Station NOY 27245, Spec. 28839. Plans deposit $10. CD 12/26.

La., Lake Charles—B.A. 6/4—Calcasieu Parish Police Jury, 459,600 cu. yd. channel excav.

N. C., Greensboro—High Point—AIRPORT—B.A. 6/4—Guilford Co., Greensboro, control tower at Greensboro-High Point Airport. Plans deposit $10. Edward Loewenstein, Greensboro, archt. CD 5/22/46.

Miss., Belzoni—B.A. 6/5—City, repair existing water well and pump and drill new well, 750 GPM flow. Plans deposit $10.

† **La., Shreveport**—FUELING FACILITIES—B.A. 6/6—U. S. Eng., 300 Broadway, Little Rock, Ark., addnl. fueling facilities at Barksdale Air Force Base, Eng. 03-050-51-9. CD 5/2.

† **Mississippi**—B.A. 6/6—U. S. Eng., P. O. Box 60, Vicksburg, Rosebud School to Caney Bayou Rd., Enid Reservoir area, Panola Co. 9 mi. west of Water Valley, incl. ditch and roadway excav. clearing, grubbing, wid'n. surf., CIVENG 22-052-51-179.

BIDS ASKED—BUILDINGS

Ga., Hartwell—HOUSING—B.A. 5/29—Hartwell Housing Auth., Hartwell, Projects GA 81-1 and GA 81-2 50 housing units, $400,000. Plans deposit $50. Abreu & Robeson, 22 Marietta St., Bldg., Atlanta, archt. CD 5/16/50.

Ga., La Grange—HOUSING—B.A. 5/29—La Grange Housing Auth., La Grange, Projs. GA 26-1 and GA 26-2, 420 housing units. Poundstone, Ayers & Godwin, Bona Allen Bldg., Atlanta, archts. CD 5/15/50.

N. C., Greensboro—HOUSING—B.A. 5/29—Greensboro Housing Auth., City Hall, N. C. 11-2, Housing, 400 dwelling units and administration bldg. Plans deposit $50. McMinn & Norfleet, 233½ N. Greene St., Archts. CD 4/26, under LB.

† **S. C., Gaffney**—WAREHOUSE—B. A. 5/29—Broad River Electric Corp., Gaffney, warehouse and office. Plans deposit $25. Southern Engr. Co., 1000 Crescent Ave., N.E., Atlanta, Ga., archts.

Va., Catawba Sanatorium—BOILER PLANT—B. A. 5/29—At office Dr. J. B. Nichols, Catawba Sanatorium, boiler plant and connecting mains for State of Virginia, Richmond. $375,000. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, engrs. CD 10/11/44.

† **Va., Norfolk**—BUILDING—B.A. 5/29—Pub. Wks. Office Headquarters, Fifth Naval Dist., U. S. Naval Base, Zone 11, addn. to Bldg. P-62 at U. S. Naval Base, NOY 26130, Spec. 28229, repairs to Bldg. AN-67, NOY, 26128, Spec. 28227. Plans deposit $10 each.

Ala., Jasper—HOUSING—B.A. 5/30—Jasper Housing Auth., Jasper, Proj. ALA 12-3, 36 housing units. $325,000. Long & Gatling, Frank Nelson Bldg., Birmingham, archts.

Miss., Cleveland—STADIUM-DORMITORY—B.A. 5/30—State Bldg. Comn., State Office Bldg., Jackson, stadium-dormitory at Delta State Teachers College, $350,000. Bids 12/18 rejected. CD 12/29, under LB.

La., New Orleans—HOSPITAL—B.A. 5/31—Roman Catholic Sisters of Mercy of the Union, 1321 Annunciation St., 117,000 sq. ft. Mercy Hospital. Favrot, Reed, Mathes & Bergman, Nola Bldg., archts. CD 12/12/45.

▲ **Ala., Selma**—HOUSING UNITS—B.A. About 6/1—Dpt. Air Force, Dist. Eng., Post Office Bldg., Atlanta, Ga., construct, manage and finance 225 housing units at Craig Air Force Base. $1,800,000. Extended date. Raymond Sizemore, 16 S. Hull St., Montgomery, archt. CD 1/23.

Fla., Miami Beach—HOUSING—B.A. 6/1—Miami Beach Housing Auth., c/o Norman M. Giller, archt., 1575 Washington Ave., 50 housing units, $400,000.

Ala., Hamilton—HOUSING—B.A. 6/5—Hamilton Housing Auth., 40 housing units, Proj. Ala. 53-1, $325,000. Plans deposit $35. Extended date. Turner & Northington, Medical Arts Bldg., Florence, archts. CD 4/5.

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **Blythe Bros. Co., Inc.**, 2911 Hutchinson Ave., Charlotte, N. C. and **Ralph E. Mills, Co. Inc.**, 1210 Tennessee St., Salem, Va. Low Bidder $5,252,560, major expansion facilities, Norfolk Naval Air Station, NORFOLK, VA., Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, 11, Va. CD 4/20.

▲ **J. A. Jones Constr. Co.**, 209 W. 4 St., Charlotte, N. C. Low Bidder (A) $715,500; (B) $621,135; (C) $1,323,400 (D) $705,500; (E) $606,135; (F) $1,298,400, 2 transit sheds, storage warehouse, railroads, water and sewer lines, etc. WILMINGTON, N. C. State Ports Auth., Radio Bldg., Wilmington, N. C. Bids May 9. CD 4/12.

† **W. L. Cobb Constr. Co.**, Decatur, Ga. Low Bidder. $619,429. surf. motor pool area, FORT BENNING, GA. U. S. Eng., P.O. Box 889, Savannah, Ga. Bids May 14. CD 4/20.

† **Kenyon Dredging Co.**, P. O. Box 96, Bauxite, Ark. Low Bidder. $543,600. 3,600,000 cu. yd. channel excav., in Yalobusha River, Grenada, Leflore and Carroll Counties, Inv. 51-146, MISSISSIPPI. U. S. Eng., P. O. Box 60, Vicksburg, Miss. Bids May 10. CD 4/17.

▲† **Charles H. Tompkins Co.**, 907 16 St. N.W., Wash., D. C. Low Bidder, $1,500,000. sewage treatment plant, TULLAHOMA, TENN. U. S. Eng., Tullahoma, Tenn. Bids May 8.

LOW BIDDERS—BUILDINGS

Graham Bros., Southern States Bldg., Richmond, Va., Low Bidder, $946,800. consolidated HIGH SCHOOL and AGRICULTURAL bldg., ORANGE, VA. Town, Orange, Va. Bids May 10. CD 4/12.

J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C. Low Bidder, $447,200. Double Oaks SCHOOL, CHARLOTTE, N. C. Bd. School Comrs., 600 E. Trade St., Charlotte, N. C. Bids May 9. A. G. Odell, Jr. & Assoc., 109 W. 3 St., Charlotte, N. C., archts.

W. G. Wetmore, 649 N. Mill St., Jackson, Miss. Low Bidder. $849,898. Jack C. Hardy Junior High SCHOOL, JACKSON, MISS. Jackson Municipal Separate School Dist., Jackson, Miss. Bids May 10. CD 4/23.

▲ **Perrilliat-Rickey Constr. Co.**, P. O. Box 7027, New Orleans, La. Low Bidder. $1,209,000. 4 story, 66x336 ft. high SCHOOL addns., NEW ORLEANS, LA. Jesuit High School Bd., 4533 S. Carrollton Ave., New Orleans, La. Bids May 10. CD 5/2.

CONTRACTS—HEAVY CONSTRUCTION

▲† **J. A. Jones Constr. Co.**, 209 W. 4 St., Charlotte, N. C. Contract Awarded. $3,454,700. Two 69,000 sq. ft. Academic Bldgs. at Keesler Air Force Base, BILOXI, MISS. U. S. Eng., P. O. Box 1169, 2301 Grant St., Mobile 7, Ala. Bids May 8. CD 4/26.

Blaw-Knox Co., 829 Beaver Ave., Pittsburgh, Pa. Contract Awarded. $700,000. 2,400 tons of transmission towers, FLORIDA. Florida Power Co., 101 S St., S., St. Petersburg, Fla.

▲ **J. B. Michael & Co.**, 1021 Heywood St., Memphis, Tenn. Contract Awarded. $1,474,030. Filter plant addn., NASHVILLE, TENN. City, City Hall, Nashville, Tenn. Bids Apr. 27. CD 5/10, under LB.

CONTRACTS—BUILDINGS

▲ **Daniel Constr. Co.**, 429 Main St., Greenville, S. C. Contract Awarded. Approx. $2,000,000. MILL addn., BELTON, S. C. Peerless Mills, c/o contractor.

Martindale Bros., Murfreesboro, Tenn. Contract Awarded. Est. $750,000. 1 story, steel, concrete, brick, 63,000 sq. ft. OFFICE, on 7 acre tract, BOWLING GREEN, KY. Holly Carburetor Co., Bowling Green, Ky. Northern Perrell & Windrom, 236 Court Ave., Memphis, Tenn., archts.

Style Constr. Co., 316 S. 5 St., Louisville 2, Ky. Separate Contracts. $850,000. 73 RESIDENCES, 6 APARTMENTS, LOUISVILLE, KY.

Louisville Gas & Electric Co., 311 W. Chestnut St., Louisville, Ky. Own Forces. $750,000. Electric POWER SUB-STATION with equip., MULDRAUGH, KY.

▲ **Stein Constr. Co.**, 1077 Duncan Ave., Chattanooga, Tenn. Contract Awarded. Approx. $2,000,000. Gun mfg. PLANT, CHATTANOOGA, TENN. Wheland Co., c/o contractor.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Mich., Palmyra — SCHOOL — B.A. 5/29 — School Bd., Clara Rogers, secy., elementary school. Plans deposit $20. W. T. Anicka, 617 Forest Ave., Ann Arbor, archt.

O., Toledo—GARAGE—B.A. 5/31—Dpt. P. Wks., S. O. Linzell, dir., Ohio Depts. Bldg., Columbus, Lucas County Hy. garage. Peterson, Hoffman & Barber, Spitzer Bldg., archts.

O., Oxford—DORMITORY—B.A. 6/1—Dpt. P. Wks., S. O. Linzell, dir., Ohio Depts. Bldg., Columbus, Men's Dormitory No. 4 and No. 5 at Miami University. Charles F. Cellarius, 906 St. Paul Bldg., Cincinnati, archt. Fosdick & Hilmer, Union Trust Bldg., Cincinnati, engrs. H. G. Allen, c/o owner, cons. archt. CD 5/28/45.

▲ **Mich., Albion**—HOUSING—B.A. 6/5—City of Albion Housing Auth., R. J. Ray, dir., 100 brick housing units, Proj. PHA Mich. 14-1. $1,000,000. Plans deposit $50 refundable. Eberle M. Smith Associates, Inc., 153 E. Elizabeth St., Detroit, archts. CD 8/3/50.

▲ **Ill., Chicago**—APARTMENT—Bids Asked—Community Development Trust, 39 S. State St., Chicago, Zone 3, eight 5 story and eight 4 story apartments, 352 units, $3,500,000. Holsman, Holsman, Klekamp & Taylor, 39 S. State St., Zone 3, archts.

Wis., Pulaski—FACTORY—Bids Asked—John A. Wood, 3308 Warmitage St., Chicago, Ill., 80,000 sq. ft. factory. $500,000. Robert W. Surplice, Green Bay, Wis., archt.

LOW BIDDERS—HEAVY CONSTRUCTION

Northern States Co., 33 N. LaSalle St., Chicago 2, Ill. Low Bidder, $848,234, sewage treatment works, activated sludge; **Walsh Oil Co.**, North Broadway, Joliet, Ill., $355,600, sewage treatment works, primary, HOBART, IND. City, Hobart, Ind. Consoer, Townsend & Assoc., 351 E. Ohio St., Chicago 1, Ill., engrs.

▲ **City**, City Hall, Missouri Ave. at Main St., East St. Louis, Ill., rejected bids Jan. 10, trunk and lateral sanitary sewers in eight sections, incl. rein.-con. box ranging from 6x6 ft. to 11x18 ft., laterals from 6 -to 72-in., EAST ST. LOUIS, ILL. L. B. $11,000,000. Will re-advertise. CD 1/17, under LB.

W. L. Hall, Atwood, Ill. Low Bidder. $203,000. water sys. imprvs. incl. raw water supply, slow sand filter plant, laboratory equip., elevated tank, valves fittings, etc., KINMUNDY, ILL. City, City Hall, Kinmundy, Ill. Bids May 8. CD 4/27.

▲ **State Hy. Comn., Madison, Wis.** rejected bids May 8, grade, drain, base course 4.944 mi. Waukesha County Line-C.T.H. 60 Road, U. S. Hy. 41, Proj. 103-1(28) Contr. 1, Option A, Washington Co. L. B. $602,705; grade, drain, base course 3.385 mi. U.S.H. 41-West Bend and Waukesha Co. line, S.T.H. 60 Roads, U.S. Hys. 45 and 41, Proj. F 027-1(10) and F 03-1(28), Washington Co., L. B. $570,379, WISCONSIN. CD 5/14, under LB.

Carl Goodwin & Sons, Allegan, Mich. Low Bidder. $107,003. bridge over U. S. 1 to carry relocation of interchange, Proj. FBI of 39-3, C1 (FI 400 1), Kalamazoo Co., MICHIGAN. State Hy. Dpt., 222 Townsend St., Lansing 13, Mich. Bids May 10. CD 5/2.

I. Whitehead Constr. Co., Sault Ste Marie, Mich. Low Bidder. $80,382, est. $65,000, stabilized aggregate 2.27 mi. M 134, Proj. SS 11-66, C1 (S 611-1), Chippewa Co.; **Thornton Constr. Co.**, Hancock, Mich., $133,970, est. $135,000. bit. aggregate surf. 8.429 mi. M 26 U. S. 45, Proj. M 66-54, C1, M 66-54, C1, M 66-16, C7 (F 103 6), Ontonagon Co., MICHIGAN. State Hy. Dpt., 222 Townsend St., Lansing 13, Mich. Bids May 8. CD 4/27 and 5/2.

▲ **Cooke Contg. Co.**, 116 Penobscot Bldg., Detroit, Mich. Low Bidder, $359,303, est. $300,000. b. conc. 6.672 mi. U. S. 16, Proj. M 82-6, C9 M 63-9, C4, Wayne Co.***Detroit Asphalt Paving Co.**, 702 Transportation Bldg., Detroit, Mich., $308,897, est. $300,000. b. conc. 2.94 mi. U. S. 16, conc. 11.83 mi. U. S. 16 Maple Rd. to Farmington Rd. Proj. M 63-8, C7, M 63-29, C7, Oakland Co.; $238,631, est. $225,000. b. conc. 3.005 mi. U. S. 10, Proj. FI 82-48, C1 (FI 258 18), FI 63-24, C20 (FI 250 18), Wayne and Oakland Counties.

Louis Garavaglia, Interzone, Center Line, Mich. and **Carl Goodwin & Sons**, Allegan, Mich., $357,058, est. $360,000, grading, drainage 1.086 mi. M 50 to M 106 of U. S. 12, Proj. F 38-48, C5 (FI 308 8), Jackson Co.***Hodgkiss & Douma**, Petoskey, Mich., $169,797, est. $160,000, b. conc. 8.89 mi. U. S. 131 and M 75, Proj. M 15-8, C2, Charlevoix and Emmet Counties***Mid-American Engineering Corp.**, St. Joseph, Mich., $219,135, est. $220,000, b. conc. 13.413 mi. U. S. 131 and M 66, Proj. 40-2, C4, 40-11, C5, (FI 165 11), Kalkaska Co.*** **Lewis & Frisinger Co.**, Ann Arbor, Mich., $104,355, est. $80,000, c. conc. 0.35 mi. Proj. M 81-11, C5, Washtenaw Co., MICHIGAN. State Hy. Dpt., 222 Townsend St., Lansing 13, Mich. Bids May 10. CD 5/2.

LOW BIDDERS—BUILDINGS

M. J. McDermott, 30 N. LaSalle St., Chicago 2, Ill. Low Bidder. $544,000. INFIRMARY and OFFICE addn., alterations, OAK FOREST, ILL. Cook Co., County Bldg., Chicago 2, Ill. Raymond Houlihan, 30 N. Dearborn St., Chicago 2, Ill., archt.

CONTRACTS—HEAVY CONSTRUCTION

▲ **O'Keefe Constr. Co.**, 638 N. Superior St., DePere, Wis., Contract Awarded, $1,097,906, grade, drain, base course 8.329 mi. U. S. Hy. 41-West Bend land Waukesha Co. Line, S.T.H. 60 Roads, U.S. Hys. 45 and 41, Contrs. 1 and 1 and 2, Proj. F027-1 (10) and F 03-1(28), Washington Co., WISCONSIN. State Hy. Comn., Madison, Wis. Bids May 8. CD 5/14, under LB.

CONTRACTS—BUILDINGS

▲ **Henry J. Spieker Co.**, 1418 Elm St., Toledo, O. Contract Awarded, $1,088,070, general constr. 2 story Junior HIGH SCHOOL, Alexis Rd. and Whitmer Dr., TOLEDO, O. Bd. Educ., Washington Twp. School Dist., 5530 Whitmer St., Toledo 12, O. Bids May 8. CD 4/11.

▲ **Poirot Constr. Co.**, 2001 W. Pershing Rd., Chicago, Ill. Contract Awarded. Approx $2,500,000. 1 story, brick, rein.-con. FACTORY and OFFICE, CHICAGO, ILL. Continental Freezer, Inc., 4220 Kildare St., Chicago, Ill. Bids Apr. 6. CD 3/30.

E. J. Bruns, Libertyville, Ill. Owner Builds. $500,000. 50 HOMES, GLENVIEW, ILL. Municipal Engineering Co., 188 W. Randolph St., Chicago 1, Ill., archt.

▲ **Manilow Constr. Co.**, 105 W. Monroe St., Chicago 3, Ill. Owner Builds. $4,000,000. 400 HOMES, Homewood Area, near 175 St. and Dixie Hy., HOMEWOOD, ILL. Carl Kastrup, 7346 Madison St., Forest Park, Ill., archt. Awarded May 7.

▲ **Lynn Haven Builders Co.**, 9110 Ogden Ave., Brookfield, Ill. Owner Builds. $1,100,000. 100 HOMES, LYONS, ILL. Awarded May 4.

Evanston Constr. & Engineering Co., 833 Chicago St., Evanston, Ill. Owner Builds. $500,000. 50 HOMES, NORTHBROOK, ILL. Awarded May 7.

▲ **L. R. Ritenour & Assoc.**, 1500 N. Telegraph Rd., Dearborn, Mich. Owner Builds. $3,000,000. 225 brick ranch HOMES on 106 acres, Fair Lane, DEARBORN, MICH. CD 5/2.

R. E. Dailey & Co., 9900 Northlawn St., Detroit, Mich. Contract Awarded. $617,800. 2 story, bsmnt., brick, steel, concrete, 420,270 cu. ft. Marquette Elementary SCHOOL addn., Canyon St., DETROIT, MICH. City, Bd. Educ., Detroit, Mich. Bids May 3.

Rozycki Brothers Co., 2268 E. Forest St., Detroit, Mich. Contract Awarded. $662,430. 2 story, bsmnt., brick, steel 476,715 cu. ft. Stevens T. Mason Elementary SCHOOL, Lantz and Mitchell Sts., DETROIT, MICH. City, Bd. Educ., Detroit, Mich. Bids Apr. 25. CD 4/16.

(Continued on page 116)

WORLD'S LARGEST TURBINE PUMPS

Interesting Data

ON THESE GIANTS IN THE WORLD OF MOVING WATER

LOCATION: Chelsea, N. Y., 60 miles north of City of New York.

PROJECT: Pumping plant to augment supply to Delaware Aqueduct from Hudson River.

CAPACITY: 100 million gallons a day to be supplied by 5 pumps. Sixth pump for standby use rated at same capacity, namely 14,000 gpm.

LIFT: Rated head 575 ft. but suitable for efficient operation for heads between 525 and 625 ft.

MOTORS: Six 2500 hp motors @ 900 rpm; 3 phase, 60 cycle at 4,000 volts.

PERFORMANCE: Overall efficiency required 75%. Pumps tested exceeded requirements, giving overall efficiency from 83.4% to 87.7%.

PUMPS: 6 Peerless close-coupled vertical turbine type; 5 stages, 36" diameter bowls. Discharge size: 24".

PURCHASER: Board of Water Supply, City of New York.

GENERAL CONTRACTORS: Tuller Construction Co.; A. S. Dillenbeck.

NEW 100 MILLION GALLON A DAY PLANT FOR THE CITY OF NEW YORK USES SIX 2500 HP PEERLESS VERTICAL CLOSE-COUPLED TURBINE PUMPS

Another first for Peerless,—first to apply 2500 hp to power a vertical close-coupled turbine pump. Six of these tremendous Peerless pumps, the world's largest, are now installed, tested, accepted and in operation at Chelsea, N. Y. to supplement the water supply of the City of New York. The complete success in the design, manufacture and application of these giant Peerless pumps, which in test exceeded required overall efficiency by 8 to 12 percentage points, is added evidence as to why Peerless is Amercia's largest manufacturer of vertical turbine pumps. Look to Peerless for continued leadership in the economical production of water for municipalities, industry and agriculture. Peerless turbine pumps are described in two bulletins, B-141 and B-159. Write for your copies today.

PEERLESS PUMP

fmc

PEERLESS PUMP DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION

Address Inquiries to Factories at:
Los Angeles 31, California or Indianapolis 8, Indiana
Offices: New York, Atlanta, Fresno, Los Angeles, Chicago, St. Louis, Phoenix; Dallas, Plainview and Lubbock, Texas; Albuquerque, New Mexico.

(Continued from page 114)

▲ **Lester Building Co.**, 16536 Wyoming St., Detroit, Mich. Owner Builds. $3,200,000. 395 HOUSES on 75 acre site, West and Grange Sts., TRENTON, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
June 1 Missouri
STREETS AND ROADS
May 29 Iowa

† **Ark., North Little Rock**—B. A. 5/29—Veterans Admin., Vermont Ave. between H and I Sts., N.W., Wash., 25, D. C., Steel Water Tank and Tower No. 87, incl. excavating, grading and concrete work for Veterans Administration Hospital, Spec. 5163, Proj. No. 03-5079.

† **Kansas**—B.A. 5/29—U. S. Eng., 10 E. 17 St., Kansas City 8, Mo., pressure relief well sys., Third Stage, Fairfax-Jersey Creek Unit, Kansas City's Flood Control Proj., CIVENG 23-028-51-119. CD 4/17.

Minn., Ada—B.A. 5/29—Norman Co., A. Elleraas, aud., Bridge 7020, 45 ft., 60 ft., 45x24 ft. cantilever beam spans over Marsh River at Shelly, SP-54-501-03 (SAR 9), Minn. Proj. ERS 12, grading 0.5 mi. near Shelly, SP 54-501-05 (SAR 9), Minn. Proj. S 503 (1). $60,000. Plans deposit $2. L. N. Nelson, co. hy. engr.

† **Wyoming**—B.A. 5/31—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars, Bonneville, Emery, Shoshoni, misc. structural steel and handrailings for Boysen Power Plant, Boysen Div., Boysen Unit, Missouri River Basin Proj., Inv. No. DS-3418. CD 6/1/44.

Okla., Tulsa—B.A. 6/1—City, City Hall, clearing upper Spavinaw reservoir site, Spavinaw. $50,000. W. R. Holway, 302 E. 18 St., engr.

Ark., Little Rock—AIRPORT IMPRVS.B.A. 6/4—Arkansas National Guard, Pyramid Bldg., runway at Adams Field, CIVENG 03-055 NG 2 FY 51.

Minn., Battle Lake—B.A. 6/5—Village, G. Nelson, clk., (A) sanitary sewerage sys., $23,650 lin. ft. sewer main, 380 lin. ft. c.i. force main, (B) waste treatment plant, 2 pumping stations, $177,000. Plans deposit Proj. A $10, Proj. B $15. W. C. Larson, Detroit Lakes, engr. CD 9/22.

Minn., Detroit Lakes—B.A. 6/5—Becker Co., C. R. Erickson, aud., grading 3.6 mi. between 4.6 mi. south of Lake Park, 8.2 mi. south of Lake Park, S. P. 03-502-01 (SAR 8), Minn. Proj. S 621 (2); grading 3.8 mi. between T. H. 34 and 3.7 mi. north of Frazee, S. P. 03-509-04, (SAR 4), Minn. Proj. S 689 (1). $60,000. Plans deposit $1.25 each. E. G. Chilton, co. hy. engr.

† **Tex., Amarillo**—ELECTRIC POWER DISTRIBUTION SYS.—B.A. 6/5—U. S. Atomic Energy Comn., Los Alamos, electric power distr. sys. (Pantex Plant) Inv. No. 291-51-98. $250,000-$500,000. Plans deposit $50. Extended date. CD 4/19.

Wyoming—TRANSMISSION LINES—B.A. 6/5—Wheatland Rural Electric Assn., Wheatland, labor for constructing 22.64 mi. transmission lines, Platte Co. $65,000. C. B. Eng. Co., S. Grove St., Denver, Colo., engr. CD 4/5/49.

Tex., Harlingen—B.A. 6/7—Arroyo Colorado Navigation Dist., Harlingen, terminal facilities, incl. bulkheads, steel sheet piling, etc. $90,000. Plans deposit $25. Sigler, Clark & Winston, 1 mi. East Hy., Weslaco, engrs. CD 4/2, under LB.

BIDS ASKED—BUILDINGS

Ia., Shenandoah—HOSPITAL—B.A. 5/29—Henry and Catherine L. Hand Community Hospital, Shenandoah, hospital, $375,000. John Latenser & Sons, 1307 Farnam St., Omaha, archts. CD 4/26.

Mo., Troy—HOSPITAL—B.A. 5/29—Lincoln Co. Memorial Hospital, Bd. Trustees, H. H. Garrett, chn., 1 story, part bsmnt., brick, concrete, steel, 301,500 cu. ft. county hospital, Ernest T. Friton, 410 Security Bldg., 319 N. 4 St., St. Louis, Zone 2, archt. CD 1/21/49.

Minn., Minneapolis — CHURCH — B.A. 5/29 — At office Magney, Tusler & Setter, archts., 202 Foshay Tower, brick church, front part 45x143 ft., main auditorium 70x77 ft., for Second Christian Science Church, 3 Ave. S. 12 St. $400,000. CD 10/31/50.

Tex., McKinney — HOUSING — B.A. 5/31 — McKinney Housing Auth., McKinney, 100 housing units, Tex 27-1 and 27-2. $825,000. Plans deposit $50. Extended date. Boese & Harkrider, 1127 Texas & Pacific Bldg., Fort Worth, engrs. and archts. CD 4/30.

† **Wyoming**—PREFABRICATED BUILDINGS—B.A. 5/31—Bureau Reclamation, Dpt. Interior, P. O. Box 280, Casper, furnishing prefabricated buildings for control houses for Julesburg, Ogallala, Sinclair and Laramie substations, Transmission Div., Colorado, Neb. and Wyo., Missouri River Basin Proj. and Kendrick Proj., Wyo., Inv. No. 7035-185; adv. ENR 5/24.

† **Tex., Fort Sam Houston**—REMODELING BLDG.—B.A. 6/1—U. S. Eng., 606 Santa Fe Bldg., Galveston, remodeling Bldg. 48, Inv. No. Eng 41-243-51-72. Bids Apr. 13 rejected. CD 4/4.

Tex., Haskell—DWELLINGS—B.A. 6/4— Housing Auth. of Haskell, Haskell, 42 dwelling units for total 20 bldgs., masonry constr. $352,000. Plans deposit $50. Bentley, Broad & Nelson, 228 Reserve Loan Life Bldg., Dallas, engrs. CD 11/13.

Minn., Mahnomen — SCHOOL — B.A. 6/5 — Bd. Educ., Alice E. Harty, clk., 1 story, brick U-shaped grade school, $300,000. Plans deposit $10. Armstrong & Schlichting, 5 E. 22 St., Minneapolis, archts. CD 1/8.

Minn., St. Paul—Y.M.C.A. Bldg.—B.A. 6/5—St. Paul Young Men's Christian Assn., G. J. Caldwell, pres., 475 Cedar St., 2 and 3 story, one part 79x88 ft., one part 95x102 ft., L-shaped Midway Branch Y.M.C.A. bldg., University and Wheeler Aves. $570,000. Wm. M. Ingemann & M. V. Bergstedt, 345 Minnesota St., archts. CD 2/12/47.

† **Tex., Port Arthur**—FIELD OFICE—B.A. 6/5—U. S. Eng., 606 Santa Fe Bldg., Galveston, relocation field office, Inv. No. CIVENG 41-243-51-94.

LOW BIDDERS—BUILDINGS

Kraus-Anderson, Inc., 501 8 St., S., Minneapolis, Minn. Low Bidder. $547,350. general constr. grade SCHOOL, and Lafayette Grade SCHOOL addn., WILLMAR, Minn. Bd. Educ., Alice C. Hedin, clk., Willmar, Minn. Bids May 8. CD 4/18.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Anderson & Sons, Inc.**, 100 N. 17 St., Minneapolis, Minn., Contract Awarded. $591,003, c. conc. 8.6 mi. between south limits of Canby and North Yellow Medicine Co. line, Yellow Medicine Co.***McCree & Co., 918 New York Bldg., St. Paul, Minn., $514,301. c. conc. 8.6 mi. between 9 mi. north of Mapleton and Jct. T. H. 14 in Mankato, Blue Earth Co.*** Okes Constr. Co., E. 1501 First National Bank Bldg. St. Paul, Minn., $540,265. c. conc. 9.9 mi. between East Grand Forks and 10 mi. north, Polk Co.*** Woodrich Constr. Co., Hopkins, Minn. $826,055. c. conc. 12.6 mi. between 0.5 mi. north of South Clay Co. line, 2.5 mi. south of Moorhead, Clay Co., MINNESOTA. State Hy. Dpt., 1246 University Ave., St. Paul, Minn. Grand total $2,471,624. CD 5/8 and 5/10, under LB.

Kansas-Nebraska Natural Gas Co., Phillipsburg, Kan. Owner Builds. $976,330. pipe lines in vicinity of Big Springs, Brule, Chappell and Lodge Pole, NEBRASKA, and Ovid and Julesburg, COLORADO. CD 11/30.

CONTRACTS—BUILDINGS

S. Patti Constr. Co., 1340 Admiral St., Kansas City, Mo. Contract Awarded. $650,000. RESEARCH and ENGINEERING BLDG., SUGAR CREEK, MO. Standard Oil Co. of Indiana, 910 S. Michigan St., Chicago 5, Ill. Bids Apr. 6. CD 3/26.

Rorick Constr. Co., 905 S. 20 St., Omaha, Neb. Contract Awarded. Approx. $625,000. APARTMENT, OMAHA, NEB. Omaha Educational Assn., 229 City Natl Bank Bldg., Omaha, Neb. CD 1/4, under LB.

▲ **A. J. Rife Constr. Co.**, 2608 Inwood Rd., Dallas, Tex. Contract Awarded. $2,536,980, Bid 1, brick veneer 300 DWELLINGS units in 50 bldgs., Tex. 9-6, DALLAS, TEX. Dallas Housing Auth., 2525 Lucas Dr., Dallas, Tex. Bids Mar. 20, awarded May 12. CD 3/30. under LB.

C. E. Fritch, 3901 Centenary St., Dallas, Tex., Contract Awarded. Approx. $625,000. PLANT, in Santa Fe Industrial Dist., in Oak Cliff, DALLAS, TEX., National Container Corp. (National Container Corp. of Texas—subsidiary) Tower Petroleum Bldg., Dallas, Tex. CD 5/10.

▲ **Tellepsen Constr. Co.**, 1710 Telephone Rd., Houston, Tex. Contract Awarded. $1,500,000. 10 bed children's HOSPITAL at Texas Medical Center, HOUSTON, TEX. Texas Childrens Hospital, c/o L. Meyer, 1511 Preston St., Houston, Tex. CD 11/2.

The Austin Co., M & M Bldg., Houston, Tex., Contract Awarded. Approx. $600,000. WAREHOUSE, HOUSTON, TEX. Foley Bros., 2103 Eastwood St., Houston, Tex.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
June 6, 16 California
STREETS AND ROADS
June 6, 7 California

† **Calif., Inyokern**—ELECTRICAL DISTRIBUTION SYSTEM—B.A. 5/31—Officer in Charge of Constr., Bldg. 981, Naval Ordnance Test Station, electrical distr. sys. NOY 27071, Spec. 29071. Approx. $60,000, Plans deposit $30; test bldg. and facilities, NOY 27070, Spec. 29070, Approx. $82,000, Plans deposit $90. at Randsburg Work Test Range. CD 7/23/48.

Ore., Sweet Home—B.A. 5/31—City, City Hall, water treatment plant addn. and construct 700,000 gal. reservoir. Plans deposit $25. Clark & Gross, 3245 Commercial St., Salem, engrs. CD 12/18.

† **Oregon**—SUB-STATION—B.A. 6/1—Bonneville Power Admin., 827 N.E. Oregon St., Portland, construct J. P. Alvey Sub-station, Lane Co. Inv. 5800. Plans deposit $25.

Wash., Kelso—B.A. 6/4—City, City Hall, laterals in Homesite addn. in northeast sect. $65,211. C. O. Mannes, city engr. CD 2/24/50.

Calif., Los Angeles—B.A. 6/5—Los Angeles Co. Flood Control Dist., 751 S. Figueroa St., asphaltic concrete lined channel in Sawpit Wash Longden Ave. to Rio Hondo Ave., Monrovia, Approx. $34,000. Plans deposit $2.58. H. E. Hedger, city engr.

† **Calif., Moffett Field**—LOADING and PARKING ADDNS. —B.A. 6/5—Pub. Wks. Office, Twelfth Naval Dist., Federal Office Bldg., Civic Center, San Francisco, aircraft loading and parking area addns., Naval Air Station. Contr. NOY-27171, Spec. No. 29135. Plans deposit $25.

Calif., San Rafael—B.A. 6/7—San Rafael Sanitary Dist. City Hall, sewage pumping plant addns. Plans deposit $10. CD 6/10/48.

Calif., Hawthorne—B.A. 6/12—City, City Hall, 1,185 lin. ft. 8 in. and 425 lin. ft. 6 in. c.i. pipe in Inglewood Ave., etc.

BIDS ASKED—BUILDINGS

† **Wash., Keyport**—OFFICERS QUARTERS—B.A. 6/1—Pub. Wks. Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle, rehabilitation bachelor officers quarters bldg. at Naval Ordnance Depot, Spec. 26108. Plans deposit $10.

Calif., Brentwood—HIGH SCHOOL—B.A. 6/1—Liberty Union High School Dist., Brentwood, science wing to Liberty Union High School. Young & Lloyd, 1171 Solano Ave., Albany, archts.

Calif., Imola—MILKHOUSE, etc.—B.A. 6/5—State Div. Architecture, P. Wks. Bldg., Sacramento, milkhouse, feed barn, etc. for dairy plant expansion at Napa State Hospital. CD 2/28/45.

Calif., San Diego—SCHOOL—B.A. 6/5—San Diego Unified School Dist., 825 Union St., 43 portable classroom units, frame constr. Approx. $300,000. Plans deposit $15. CD 11/16/50.

Calif., Soledad—COMMUNITY—B.A. 6/5—Div. Architecture, Pub. Wks. Bldg., Sacramento, 3,500 sq. ft. wood frame community bldg. at State Prison. Plans deposit $25. CD 3/14/46.

Ore., Lebanon—HOSPITAL—B.A. 6/5—Lebanon Community Hospital Assn., Central Lane, 50-bed rein.-con. hospital. Plans deposit $50. Roald, Schmeer & Harrington, Spalding Bldg., Portland, archts. CD 5/4.

Ore., Portland—UTILITY TUNNEL—B.A. 6/5—State Bd. Higher Educ., Eugene, first unit of utility tunnel and steam heating sys. at Oregon State College. $400,000. Plans deposit $50. W. Bruce Morrison, Cascade Bldg., engr. CD 4/29.

Calif., King City—SCHOOL—B.A. 6/8—King City Union Elementary School Dist., 206 Mildred St., school. Plans deposit $25. William Rowe, 38 First St., San Francisco, archt.

Calif., Palo Alto—PLANT—B.A. 6/15—United Helicopters, Inc., 1350 Willow Rd., 160x160 ft. addn. to present assembly factory, factory shop bldg. Matt Lehmann, 45 James Ave., Redwood City, architectural engr.; steel, concrete engineering and cafeteria bldg., Walter L. Dickey, 1295, Wilson St., structural engr., George S. Erskine, 1618 El Camino Real, Menlo Park, Calif., professional engr. CD 4/27.

LOW BIDDERS—HEAVY CONSTRUCTION

† **Olof Nelson Constr. Co.**, Logan, Utah, Low Bidder, $560,669, est. $682,713, bit. surfaced roadway 36.957 mi. of Temple-Dugway Proving Grounds Access Road, Proj. AD-1, Tooele Co. UTAH. Bureau Pub. Roads, Dpt. Commerce, 473 Federal Bldg., Ogden, Utah. Bids May 1.

State Div. Hys., P. Wks. Bldg., Sacramento, Calif., rejected bids Apr. 18, grading, surf., rein.-con., structural steel bridge 4.6 mi. between Isabella and Isabella Dam Site, Kern Co., CALIFORNIA. L.B. $933,741. CD 4/27, under LB.

† **Washington Iron Works**, 1500 6 Ave. So., Seattle, Wash. Low Bidder, $636,000. furnish slide gates and appurtenances for Folsom Main Dam outlet, CALIFORNIA. U. S. Eng., Wright Bldg., Sacramento, Calif.

▲ **Winston Bros. Co.**, 1530 S. Calif St., Monrovia, Calif. Low Bidder, $1,634,442, construct 5 bridges and 0.6 mi. grading, surf. Hollywood Freeway between Cahuenga Blvd. and Goer St., Los Angeles Co., CALIFORNIA. State Div. Hys., 120 Spring St., Los Angeles, Calif. Bids May 10. CD 4/18.

▲ **Mercer Fraser & Mercer Fraser Gas Co.**, 2 and Commercial Sts., Eureka, Calif. Low Bidder, $145,099, grading 0.5 mi., plant mix surf. 2.8 mi. between Trinidad and 2.8 mi. north, Humboldt Co.***Richter Bros. Constr. Co., P. O. Box 1511, Oroville, Calif., $313,618, surf, constr. rein.-con. girder bridge 0.8 mi. across Indian Creek, Sierra Co.***United Concrete Pipe Corp., Box 425, Baldwin Park, Calif., $68,870, wid'n. pavement, other road work, surf. 3.9 mi. Oakdale-Valley Home Rd. Stanislaus Co.***Harms Bros., 5261 Stockton Blvd., Sacramento, Calif., $596,734, grading, surf., construct concrete arch culvert 3.3 mi. between Jamestown and Sonora, Tuolumne Co. CALIFORNIA. State Div. Hys., P. Wks. Bldg., Sacramento, Calif., Bids May 9. CD 4/18.

†**Peter Sorensen**, P. O. Box 790, Redwood City, Calif., Low Bidder, $523,000. construct jet fuel storage facilities at Naval Air Station, MOFFETT FIELD, CALIF. Twelfth Naval Dist., Federal Office Bldg., San Francisco, Calif., Bids May 9. CD 4/18.

LOW BIDDERS—BUILDINGS

▲ **Williams & Burrows, Inc.**, and **Carl N. Swenson**, 10 Calif. Dr., Burlingame, Calif. Low Bidder, $3,359,000. 5 story, rein.-con. HOSPITAL, El Camino Real, HILLSBOROUGH, CALIF. Bids May 9. CD 3/15.

CONTRACTS—HEAVY CONSTRUCTION

Alex Robertson Co., 14433 S. Paramount Blvd., Paramount, Calif. Contract Awarded, $620,000. installing 82,000 ft. 30 in. pipe 104 St. and Crenshaw Blvd. to Sunset Blvd., and Sullivan Canyon, Los Angeles Co. CALIFORNIA. Southern California Gas Co. & Southern Counties Gas Co., 810 S. Flower St., Los Angeles, Calif. Bids Apr. 24. CD 4/3.

Parr Constr. Co., 5677 Selmaraine Dr., Culver City, Calif. Contract Awarded, $568,802. est. $447,000. Holly-

dale maintenance yard for Road Dist., Hondo, LOS ANGELES, CALIF. Bd. Supervs., Los Angeles Co., 501 Hall of Records, Los Angeles, Calif. Bids May 1. CD 5/8, under LB.

Peter Sorensen, P. O. Box 790, Redwood City, Calif., Contract Awarded. $538,368, sewage treatment plant under Contr. 5, MENLO PARK, CALIF. Menlo Park Sanitary Dist., 450 C St., Menlo Park, Calif. Bids Apr. 30, Awarded May 3. CD 5/8, under LB.

CONTRACTS—BUILDINGS

Dolph Jones, 2213 N. Proctor St., Tacoma, Wash. Contract Awarded. $832,700. central LIBRARY addn., TACOMA, WASH. City Library Bd., 1120 S. Tacoma Ave., Tacoma, Wash. (Correction name of Contractor). CD 2/27 under contracts awarded.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska**—DORMITORIES—B.A. 6/1—U. S. Eng., New Washington Hotel, Seattle 1, Wash., three 500-man dormitories, with kitchen and dining rooms and one 200-man dormitory, Elmendorf Air Force Base, Inv. No. S95-507-51-59. Plans deposit $75. Extended date. CD 5/2.

CONTRACTS—BUILDINGS

▲ † **Haddock Engineers, Ltd. & Assoc.,** Insurance Bldg., Seattle 4, Wash., Contract Awarded. $2,393,000. est. $2,437,274, refrigerated WAREHOUSE, Inv. No. S95-507-51-77, FORT RICHARDSON, ALASKA. U. S. Eng., New Washington Hotel, Seattle 1, Wash. Bids Apr. 24. CD 4/30, under LB.

▲ † **Haddock Engineers, Ltd. and Assoc.,** Insurance Bldg., Seattle 4, Wash. Contract Awarded. $4,160,000, est. $1,000,000. 56 unit family HOUSING, extend runway, construct taxiways, fuel-storage facilities and waterfront structures at Naval Base, Spec. 24153, KODIAK, ALASKA. Bureau Yards & Docks, Navy Dpt., Dir. Pacific and Alaskan Div., Treasure Island, San Francisco, Calif. Bids May 9. CD 5/15, under LB.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Alberta—B.A. 5/31—Province of Alberta, B. Russell, engr., Terrace Bldg., Edmonton, Alta., construct single barrelled contnuous wood stave pipe siphon 9 ft. in dia., 2,200 ft. long, concrete check and 1,500 ft. of bed width canal. Plans deposit $10.

N. S., Upper Port Latour—B.A. 9/17—Acting Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., harbor imprvts. Approx. $53,000. Plans deposit $20. R. Blais, c/o owner, engr.

BIDS ASKED—BUILDINGS

Ont., Ottawa—HOSPITAL—B.A. 6/4—Ottawa Civic Hospital, c/o Dr. W. D. Piercey, supt., Carling Ave., constr. East Lawn Pavilion at hospital. Approx. $550,000; boiler house bldg., addns., alterations. Approx. $125,000. Plans deposit $50 each. J. A. Ewart, 165 Sharks St., archt. A. J. Hazelgrove, Associated, 53 Queen St., archt. CD 12/28.

LOW BIDDERS—BUILDINGS

Winnipeg Supply & Fuel Co., Ltd., Boyd Bldg., Winnipeg, Man. Low Bidder, Approx. $800,000. 2 story, steel, brick LIBRARY, WINNIPEG, MAN. University of Manitoba, Fort Garry, I. W. Crawford, controller, Winnipeg, Man. Bids May 4. CD 4/18.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Pigott Constr. Co. Ltd.,** 502 5 Ave., Saskatoon, Sask., Contract Awarded. Approx. $1,000,000. 11 BUILDINGS at R.C.A.F. Station, MOOSE JAW, SASK. Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man. D. W. Laird, c/o owner, engr.

W. C. Wells Constr. Co. Ltd., 140 Ave. F.N., Saskatoon, Sask. Contract Awarded. Approx. $500,000. 7 BUILDINGS at R.C.A.F. station, SASKATOON, SASK. Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man. D. W. Laird, c/o owner, engr.

▲ **Fred Mannix Co. Ltd.,** 100 Adelaide St., W., Toronto, Ont., **C. A. Pitts Ltd.,** 67 Yonge St., Toronto, Ont., **Walsh Constr. Co.,** 122 E. 42 St., New York, N. Y., U.S.A., **Arthur A. Johnson Corp.,** 347 Madison Ave., New York, N. Y., U.S.A., **Morrison-Knudsen Co.,** 319 Broadway, Boise, Idaho, U.S.A., and **B. Perini & Sons, Inc.,** 73 Montwait Ave., Framingham, Mass., U.S.A., Contract Awarded, first two sections; **Rayner Constr. Ltd.,** 29 Commercial Rd., Leaside, Ont., and **Atlas Constr. Co. Ltd.,** 275 Huron St., Toronto, Ont., Contract Awarded, second two sections, est. approx. $50,000,000, hydraulic plant for Beck-Niagara power generating station, each sect. approx. 6,225 ft. long, 45 ft. finished diameter, NIAGARA FALLS, ONT. Hydro-Electric Power Commission of Ontario, 620 University Ave., Toronto, Ont. Bids May 1," awarded May 15. CD 4/5.

CONTRACTS—BUILDINGS

Manson Bros. Ltd., 1871 Waverley St., Vancouver, B. C. Contract Awarded. $670,189, new Junior-Senior HIGH SCHOOL, MISSION, B. C. School Dist. 75, Mission, B. C. Awarded May 10. CD 5/2, under LB.

▲ **A. F. Byers Constr. Co. Ltd.,** 5675 Western Ave., Montreal, Que. Contract Awarded. Approx. $1,700,000. 3 story 148x225 ft. bsmt., rein.-con. granite base Redpath LIBRARY, McTanish St., MONTREAL, QUE. Bd. Governors, McGill University, Montreal, Que. Bids Apr. 16. CD 3/26.

U. S. Government

GOVERNMENT OF THE DISTRICT OF COLUMBIA, DIRECTOR OF SANITARY ENGINEERING, D. C., May 17, 1951. SEALED PROPOSALS will be received in Room 509, District Building, 14th and 'E' Streets, N. W., Washington 4, D. C., until 2:00 P.M., DAYLIGHT SAVING TIME, June 5, 1951, and then publicly opened and read for the construction of OUTLET STRUCTURE AND SECTION 1 OF EAST BRANCH, PINEY BRANCH TRUNK SEWER, vicinity of 16th Street and Piney Branch Parkway, N. W. This project consists of the following: 230 linear feet open channel outlet structure, junction and transition sections; 675 linear feet 18'0" x 10'0" concrete and brick masonry sewer; 100 linear feet 10'0" x 10'0" concrete and brick masonry sewer; 275 linear feet 9'9" diameter concrete and brick masonry sewer; 150 linear feet 4'0" diameter concrete and brick masonry sewer; and 110 linear feet 12" diameter terra cotta pipe sewer. These quantities include approximately 20,000 cubic yards of unclassified excavation, 5,100 cubic yards of reinforced concrete masonry and 300 cubic yards of brick masonry. Proposal forms, drawings and specifications may be obtained in the Office of Chief Clerk, E. D., Room 427, District Building, upon the deposit of a certified check in the amount of Twenty-five ($25.00), made payable to the Collector of Taxes, D. C. (Telephone National 6000, Extension 2378)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3415) will be received by Bureau of Reclamation, Lindsay, California, until June 12, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, pipe lines and structures, including reservoirs and pumping plants, laterals 74.6E and 77.3E and sublaterals, Unit 1, Exeter Irrigation District, Friant-Kern Canal Distribution Systems, Central Valley Project, California. The work is situated near Exeter, California. Principal items are approximately: excavation 94,000 cu. yds.; furnishing and laying approximately 20 mi. of precast-concrete pipe varying from 12 in. to 33 in. in diameter; and other work. The work is divided into 2 schedules. Time allowed for completion will be 330 days. For particulars, address Bureau of Reclamation, Lindsay, California; or Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-190 will be received at P. O. Box 280, Reclamation Center, Casper, Wyoming, until 10 a.m., Mountain Standard Time, June 7, 1951, and then publicly opened for furnishing labor and materials and performing all work for Soil and Moisture Control Program Lining, Lateral 24-A, Station 0+24.5 to Station 50+41.9, Pathfinder Irrigation District, North Platte Project, Wyoming-Nebraska.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, 318 New Customhouse, Denver 2, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. The specifications will consist of 2 volumes, "Special Provisions" and "Standard Specifications for Construction of Canal Systems, March 1949." No charge will be made for copies of the Standard Specifications or for copies of the Special Provisions furnished for bidding purposes; for others the charge will be $0.30 per copy for the Standard Specifications and $0.25 per copy for the Special Provisions, not returnable.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications Nos. DC-3431 and DC-3432) will be received by Bureau of Reclamation, Loveland, Colorado, until June 26, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of penstocks for Pole Hill Power Plant and Flatiron Power and Pumping Plant and concrete pipe for Carter Lake pressure conduit, Estes Park-Foothills power aqueduct, Colorado-Big Thompson Project, Colorado. The work is situated west of Loveland, Colorado. Principal items are approximately: one penstock 8 ft. in diameter, approximately 2,940 ft. long, for Pole Hill Power Plant; 2 penstocks each 7 ft. in diameter, each approximately 5,786 ft. long, for Flatiron Power and Pumping Plant; one concrete conduit 8 ft. in diameter, approximately 1,350 ft. long, for Carter Lake pressure conduit; and other work. Bids will be received for both concrete pipe and steel pipe for the upper portions of the penstocks. Steel pipe is required for the lower portions of the penstocks. Bids for either cylinder concrete pipe or plate-steel lined monolithic-concrete conduit will be received for the Carter Lake pressure conduit. Time allowed for completion will be 550 days. For particulars, address Bureau of Reclamation, Loveland, Colorado; or Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3417) will be received by Bureau of Reclamation, Denver, Colorado, until June 14, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of Belen-Willard 115-kilovolt transmission line, Rio Grande Project, New Mexico. The work is situated south of Albuquerque, New Mexico. The line will be 115-kv., 3-phase, single-circuit, wood-pole, H-frame type approximately 53 mi. long and will have 2 overhead ground wires strung the entire length. Time allowed for completion will be 300 days. For particulars, address Bureau of Reclamation, Elephant Butte, New Mexico; or Building 1-A, Denver Federal Center, Denver, Colo.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3416) will be received by the Bureau of Reclamation, Denver, Colorado, until June 7, 1951, and then publicly opened for furnishing motor-driven pumping units as follows: 3 horizontal-shaft, centrifugal-type units, each with a capacity of 28.67 cubic feet per second under a head of 113 feet; 4 horizontal-shaft, centrifugal-type units, each with a capacity of 28 cubic feet per second under a total head of 94 feet; and one vertical-shaft unit, with a capacity of 4 cubic feet per second under a total head of 15 feet; for Columbia Basin Project, Washington. Delivery is desired within 365 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

NOTICE IS HEREBY GIVEN that sealed bids on Invitation No. 703S-185 will be received at P. O. Box 280, Reclamation Center, Casper, Wyoming, until 10 a.m., Mountain Standard Time, May 31, 1951, and then publicly opened, for furnishing prefabricated buildings for Control Houses for Julesburg, Ogallala, Sinclair, and Laramie Substations, Transmission Division, Colorado, Nebraska, and Wyoming—Missouri River Basin Project and Kendrick Project, Wyoming.

Copies of the standard forms and of the invitation may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, 318 New Customhouse, Denver 2, Colorado; I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the invitations and drawings furnished for bidding purposes; for all others $0.25 per copy, not returnable.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3413) will be received by Bureau of Reclamation, Davis Dam, Arizona, until June 14, 1951, and then publicly opened for furnishing labor and materials and performing all work for the completion of Davis Dam spillway stilling basin, Davis Dam Project, Arizona-Nevada. The work is situated 30 miles west of Kingman, Arizona. Principal items are approximately: 206,000 cu. yds. of excavation for stilling basin and river channel; 27,000 cu. yds. of concrete; 28,000 sq. yds. of bituminous surfacing; and other work. Time allowed for completion will be 560 days. For particulars, address Bureau of Reclamation, Davis Dam, Arizona; or Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3414) will be received by Bureau of Reclamation, Lindsay, California, until June 19, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of additional distribution mains, Friant-Kern Canal Distribution Systems, Lindsay-Strathmore Irrigation District, Central Valley Project, California. The work is situated near Lindsay, California. Principal items are approximately: 40,000 cu. yds. of excavation; 33,500 cu. yds. of backfill; furnishing and installing approximately 9 mi. of steel distribution mains with diameters from 6 in. to 48 in.; and other work. Time allowed for completion will be 330 days. For particulars, address Bureau of Reclamation, Lindsay, California; or Building 1-A, Denver Federal Center, Denver, Colorado.

(Continued on page 118)

OFFICIAL PROPOSALS
(Continued from page 117)

Bids: June 14, 1951

Additional Water Supply

FOR
LATHAM WATER DISTRICT, COLONIE, NEW YORK

Sealed bids will be received by the Town Board of the Town of Colonie, New York, on the 14th day of June, 1951, for furnishing all labor, materials and equipment and constructing complete, a filter plant, aerator, pumping station and filtered water reservoir together with furnishing cast iron pipe, cast iron specials, valves and miscellaneous equipment for water supply mains and the unloading, hauling and distributing of cast iron pipe, cast iron specials, valves and miscellaneous equipment for the Project for Additional Water Supply from Stony Creek.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications and Performance Bond may be examined at the office of the Town Clerk, Town Hall, Newtonville, New York, and at the office of Keis & Holroyd, 257 Broadway, Troy, New York. Copies thereof may be obtained at the office of Keis & Holroyd, or from the Town Clerk, upon payment of $25.00 for each set. Any bidder upon returning such set promptly and in good condition, will be refunded his payment, and any non-bidder upon so returning such set will be refunded $20.00.

The Town Board of the Town of Colonie, New York, reserves the right to waive any informalities in or to reject any or all bids.

A certified check made payable to the order of the Town of Colonie, in the amount of Five Per Centum (5%) of the bid must be deposited by each bidder with his bid as a guarantee that in case the contract is awarded to him, that he will, within five (5) days thereafter, execute such contract and furnish a satisfactory performance bond. On failure to do so, he shall forfeit the deposit as liquidated damages and acceptance of the bid will be contingent upon the fulfillment of this requirement by the bidder.

The successful bidder will be required to furnish a performance bond satisfactory to the Town of Colonie, New York, in the amount of the contract, and having as surety thereon, such surety company or companies as are acceptable to the Town of Colonie, New York.

The work will be let in separate contracts as follows:

Section No. 4A—Furnishing Cast Iron Pipe and Cast Iron Specials.
Section No. 4B—Furnishing Valves.
Section No. 4C—Furnishing Miscellaneous Equipment.
Section No. 5—General Construction on Filter Plant, Aerator and Filtered Water Reservoir.
Section No. 6—Filter Plant Equipment, Furnishing and Installing.
Section No. 7—Plumbing at Proposed Filter Plant.
Section No. 8—Heating at proposed filter plant.
Section No. 9—Electrical at Proposed Filter Plant.

No bidder may withdraw his bid within 30 days after the date set for the opening thereof. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof.

WILLIAM K. SANFORD, Supervisor
Keis & Holroyd Consulting Engineers
Troy, New York May 3, 1951

Bids: June 4, 1951

Structural Steel for Canopies

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDING NO. 139
CONTRACT PN-150.009

Sealed proposals for the fabrication and delivery of structural steel for the canopies at Building No. 139 at Port Newark, N. J. will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111-8th Ave., New York 11, until 12:00 noon Monday, June 4, 1951, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon Deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, May 24, 1951

OFFICIAL PROPOSALS

Bids: September 3, 1951

Underground Power House, Shafts and Tunnels

DEPARTMENT OF THE CO-ORDINATOR-GENERAL OF PUBLIC WORKS, BRISBANE, QUEENSLAND, AUSTRALIA
TULLY FALLS HYDRO-ELECTRIC PROJECT
SUPPLEMENTARY SPECIFICATION NO. TF/6A

Tenders closing at noon on the 3rd September, 1951, at the office of the undersigned are invited for the construction of a Pressure Shaft and Tunnels, Underground Power House, Access Shaft, Tailrace Tunnel and Associated Works as an alternative to the works covered by Specification No. TF/5, Penstock and Haulage, and Specification No. TF/6, Tunnel and Surge Tank, previously issued.

Particulars may be obtained from the Chief Engineer, Department of the Co-ordinator-General of Public Works, corner Melbourne and Gray Streets, South Brisbane, the Queensland Government Liaison Officer, Room 120, 82 Pitt Street, Sydney, and the Queensland Government Liaison Officer, 485 Bourke St., Melbourne, from whom copies of plans and Specifications are available.

The lowest or any tender will not necessarily be accepted.

Tenders should be endorsed—"Tender—Tully Falls Hydro-Electric Project, Underground Power House and Conduits."

C. E. PET[illegible] N
Secretary
Department of the Co-ordinator-General of Public Works
Box 185C, G.P.O., Brisbane

Bids: June 4, 1951

Paving of Upland Area

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY GRAIN TERMINAL
CONTRACT GT-110.001

Sealed proposals for paving the upland area at the Port Authority Grain Terminal will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111-8th Ave., New York 11, until 11:30 A.M., Monday, June 4, 1951, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, May 24, 1951

Bids: June 15, 1951

Pump Stations

Mid-Valley Pipeline Company, Longview, Texas, will issue specifications and drawings May 15 and receive bids until June 15 covering building of six complete five thousand horsepower oil line pump stations and extending and adding to seven existing similar stations.

Contractors interested in receiving specifications and drawings contact D. J. Ward, Purchasing Agent, Longview, Texas, prior to May 10, 1951. Copies of drawings and specifications may be obtained by making a deposit of $25 which sum will be refunded upon returning. Good condition of the complete documents within ten days after receipt of same or if used in submitting a bonafide proposal.

Mid-Valley Pipeline Co.
D. J. Ward, Purchasing Agent
Bramlette Bldg., Longview, Texas

Bids: June 4, 1951

Extension of Parking Lot No. 2

THE PORT OF NEW YORK AUTHORITY
LA GUARDIA AIRPORT
CONTRACT LGA-130.001

Sealed proposals for the extension of Parking Lot No. 2 at La Guardia Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111-8th Ave., New York 11, until 11:45 A.M., Monday, June 4, 1951, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, May 24, 1951

OFFICIAL PROPOSALS

Bids: June 14, 1951

Canal Improvement

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY

Sealed proposals for the construction of the "Prallsville Control Structures" on the Delaware and Raritan Canal Feeder in the Borough of Stockton and the Township of Delaware, Hunterdon County, New Jersey, will be received by the Division of Water Policy and Supply at its office, Room 307, 520 East State Street, Trenton, N. J., until 11 A.M. (D.S.T.), Thursday, June 14, 1951, at which time and place the bids will be publicly opened and read.

The work includes construction of reinforced concrete regulating gate structure, retaining walls, spillway and sluice gate structure, revetment with slope protection, plank operating walkways, four bar screens; excavating and paving channel; gunite lining of existing arch culverts; installation of eight sluice gates; removal of existing structures; coffer dam and pumping, miscellaneous work, restoring site. Approximate quantities involved are: Foundation excavation 750 cu. yds.; channel excavation 3400 cu. yds.; rock excavation 750 cu. yds.; concrete (Class B) 150 cu. yds.; concrete (Class C) 850 cu yds.; reinforcing steel 46,000 lbs.; pneumatic mortar protection 3200 sq. ft.; riprap slope paving 2000 sq. yds.

Drawings, specifications, form of bid, contract and bond for the proposed work will be on file at the Canal Office of the Division, 342 Academy St., Trenton, N. J. and may be inspected by prospective bidders during regular office hours. Plans will be furnished on the deposit of $10 for each set on application to the Canal office.

Bids must be made on standard proposal forms and must be submitted in sealed envelope bearing the name and address of the bidder on the outside and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey in the amount of ten per cent of the bid submitted, and must be delivered at the above place on or before the time stated. Copies of standard proposal forms will be furnished on application. Prequalification of bidders will be required. The right is reserved to reject any or all bids. BY ORDER OF THE WATER POLICY AND SUPPLY COUNCIL, John Wyack, Secretary.

Bids: May 31, 1951

Concrete Sewer and Catch Basins

SEALED PROPOSALS WILL BE RECEIVED AT THE OFFICE OF THE CITY PURCHASING AGENT, 4TH FLOOR, MAURE BUILDING, LAUREL & MAIN STREETS, RICHMOND, VIRGINIA, UNTIL BUT NOT LATER THAN 11 O'CLOCK, A. M., May 31, 1951 for constructing plain concrete sewer and catch basins, installing gas and water mains, installing electric conduits and manholes, remove car tracks and resurfacing with Asphalt in various streets within the City of Richmond, Va.

Approx. Quantities: 30,000 Cu. yds. excavation, 400 Lin. Ft. sewer, 3,300 Lin. Ft. gas & water mains, 10,000 Lin. Ft. electric conduit, 41,000 tons Asphalt in place, 96,700 Lin. Ft. car track rail removed.

Form of proposal, Plans and Specifications may be obtained upon application to the Director of Public Works, 217 Governor Street, Richmond, Virginia.

A charge of $25.00 will be made by the Department of Public Works for these plans, etc., which sum will not be refunded unless a bona fide bid is submitted, and the plans, etc., returned.

Each proposal must be accompanied by a certified or cashier's check made payable to the City of Richmond, equal to 5% of the amount of the proposal, or bid bond equal to 6% of the amount of the proposal.

The contract may be awarded by the Purchasing Agent to the lowest responsible bidder, who shall be determined in accordance with rules and regulations governing purchases or contracts adopted and established by the Council, and in accordance with and pursuant to sections 5.09, 5.11 and 12.07 of the city charter.

J. W. Huffman,
City Purchasing Agent.

(Continued on page 119)

OFFICIAL PROPOSALS
(Continued from page 118)

Bids: June 6, 1951

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time on June 6, 1951 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 2				
		L. KETCHUM, Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
Montgomery	FARC 51-12	Sloansville-Rural Grove Pt. 2, S. H. 8404 Proj. F-588(3)	3.35	8" Cen. Conc. Pavt. 22' Wide = 3.31 Mi.; Asph. Conc. Type 1A, Opt. = 0.04 Mi.	$21,000 Plans $15	$392,000
		DISTRICT No. 3				
		WILLIAM ROBINSON, Weigh Lock Building, Syracuse 1, N. Y.				
Seneca	FARC 51-15	Watkins-Lodi Pt. 3, S. H. 8035 Reservation Road-Ovid, S. H. 323 Proj. F-31(3)	5.85	8" Cem. Conc. Pavt. 22', 26', 38' & 44' Wide Reinf. Conc. Arch. 104' SP.	$57,000 Plans $25	$967,000
Tomp.	FARS 51-11	Trumansburg-Ithaca S. H. 616 Proj. F-128(2)	4.70	9" Cem. Conc. Pavt. 24'-40' Wide = 4.62 Mi. Misc. Work = 0.08 Mi. Extend 23' Sp. Conc. Slab 6' on Rt.	$35,000 Plans $10	$610,000
		DISTRICT No. 5				
		C. R. WATERS, Dist. Engr., 65 Court St., Buffalo, N. Y.				
Chautauqua	FARC 51-16	Cassadaga-Fredonia, S. H. 938 Proj. S-796(2)	0.53	Asphalt Conc. Ty. 1-A, Opt.	$5,000 Plans $10	$88,000
		DISTRICT No. 10				
		J. J. DARCY, Dist. Engr., Montauk Highway at Little East Neck Rd., Babylon, L. I., N. Y.				
Bronx & Westchester	FA BRP 51-2	Bronx River Parkway (Southerly Ext.) FA BRP 50-1, 50-2 & 51-1 Proj. U 979(12)	5.63	Landscaping & Misc. Work = 5.01 Mi. Direction Signs = 0.62 Mi.	$65,000 Plans $25	$1,180,000
Queens	FA VWE 51-2	Van Wyck Expressway, Contract 14A Proj. U 658(17)	0.30	Alpha Royalty $229.50 8" & 9" Cem. Conc. Pavt. 2 at 25' Wide = 0.28 Mi. Misc. Work = 0.02 Mi. Hy. Sep. 2 Sp. Re. Arch 1 at 60' & 1 at 44'-6" Hy. Sep. Pl. Girder, 69'-0 1" Sp. Hy. Sep. Plate Girder, Var.	$170,000 Plans $100	$2,855,000
Suffolk	N. SAG. SP 51-1	Northern-Sagtikos State Parkway (Cont. 4)	4.76	9" Unreinf. Cem. Conc. Pavt. 50' Wide	$95,000 Plans $50	$1,662,000
Suffolk	N. Sag. SP 51-2	Sagtikos State Parkway (Cont. 2A)	0.07	Grading & Structure RR. Sep. Alpha I-Beam, 53'-11" Alpha Royalty = $74.48	$14,000 Plans $15	$238,000

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated. The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

OFFICIAL PROPOSALS

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Bids: June 27, 1951

Dock, Outlet Chamber and Dredging

THE LINDEN ROSELLE SEWERAGE AUTHORITY
LINDEN, N. J.
CONTRACT No. III

1. Sealed proposals for the construction of CONTRACT No. III of a pollution abatement project in the City of Linden, New Jersey, will be received by the Linden Roselle Sewerage Authority in the Council Chambers, City Hall, Linden, until 8:00 P.M., E.D.S.T., on Wednesday, June 27, 1951, and there publicly opened and read immediately thereafter.

2. The work will consist of providing all labor, materials, equipment and incidentals required for the construction of the following:

Approximately 70,000 cu. yds. of dredging; 9000 sq. ft. of steel sheet piling; 2400 lin. ft. of steel bearing piles; 3100 lin. ft. of wood piles; 231 lin. ft. of 48" x 68" flat base reinforced concrete conduit and 24" dia. reinforced concrete and cast iron pipe; and miscellaneous structural steel and concrete deck work and appurtenances.

3. Plans, specifications, bidding and contract documents may be examined at the office of the Consulting Engineers, Alexander Potter Associates, 50 Church Street, New York 7, N. Y., and there obtained upon a deposit of $20.00 per set.

Full refund will be made to actual bidders for return of one (1) set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, within the same period, will be fifty percent (50%) of the deposit.

4. All proposals must be on the form contained in the specifications.

5. All bids must be accompanied by a certified check or acceptable bidders' bond in the amount of ten (10%) per cent of the amount of the bid, made payable to The Linden Roselle Sewerage Authority. Said checks or bonds will be returned to the unsuccessful bidders not later than thirty (30) days after opening of bids.

6. The successful bidder in each of the several contracts will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon the payment of all persons supplying labor and furnishing materials on the construction of the work.

7. No bidder may withdraw his bid within thirty (30) days after closing date for receipt of bids.

8. The Authority reserves the right to reject any or all bids and to waive any informality in the bid.

BY ORDER OF THE SECRETARY OF THE LINDEN ROSELLE SEWERAGE AUTHORITY
Charles H. Gross

DATED: May 17, 1951

OFFICIAL PROPOSALS

COMMONWEALTH OF MASSACHUSETTS. Department of Public Works. NOTICE TO CONTRACTORS: BOSTON CENTRAL ARTERY (Boston Connection —Part 1). Separate sealed proposals for the Substructure and Approaches (Contract C-1), the Steel Superstructure (Contract C-2), and Deck, Electrical Work and Snow Melting System (Contract C-3), for a single and double deck elevated highway structure, will be received at Room 427, 100 Nashua Street, Boston, Mass., until 12 o'clock noon (DST) of Tuesday, JUNE 12, 1951 and at that place and time publicly opened and read. Charge for one set of plans (applicable to all three contracts) and proposal form for one contract: $50.00, amount returnable only to bidders who return plans in good condition within three days after opening of bids. Additional proposal forms for any one of the contracts may be had upon payment of $5.00 for each proposal, which amount will be refunded if such proposal is used for the purpose of submitting a formal bid. Proposal guaranty: $100,000 for Contract C-1; $100,000 for Contract C-2; $50,000 for Contract C-3. Minimum wage rates have been established. Complete information at office of Department. Right reserved to waive any informality in or reject any or all proposals. An award will not be made to a Contractor who is not equipped to undertake and complete the work. By: WILLIAM F. CALLAHAN, Commissioner of Public Works. May 12, 1951.

Bids: June 11, 1951

Gasoline Engine Standby

Sealed proposals for the installation of a gasoline engine standby with right angle gear drive for the Borough of Chatham, New Jersey, will be received by the Borough Council in the Borough Hall, Chatham, New Jersey, at 8:45 P. M. (D.S.T.) June 11th, 1951.

Each bid must be accompanied by a certified check in the amount of ten (10%) percent of the bid, made payable to the Borough of Chatham, New Jersey.

Copies of plans and specifications may be seen at the Borough Hall, Chatham, New Jersey, or at the office of Clyde Potts Associates, 30 Church Street, New York City, and may be obtained by prospective bidders on depositing Ten Dollars ($10.00). The same will be refunded to contractors who submit bids on the return of the plans within ten (10) days after the contract has been awarded. The deposit will not be refunded to parties who do not submit proposals.
John H. Mowen
Dated May 14th, 1951 Borough Clerk

Bids: June 7, 1951

Standpipe Systems

THE PORT OF NEW YORK AUTHORITY
CONTRACT Q & M 12R
FURNISH ALL LABOR AND MATERIAL TO INSTALL SEPARATE STANDPIPE SYSTEMS IN THE NEW YORK AND NEW JERSEY LAND & RIVER VENTILATION BUILDINGS OF THE HOLLAND TUNNEL AND THE NEW JERSEY VENTILATION AND THE TWO NEW YORK RIVER VENTILATION BUILDINGS OF THE LINCOLN TUNNEL

Sealed proposals for furnishing all labor and material to install separate standpipe systems for the Holland and Lincoln Tunnels as designated above, will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, until 11:00 A.M., Thursday, June 7, 1951, at which time and place proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase. THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Bids: September 3, 1951

Notice Re Extension of Time for Tendering

DEPARTMENT OF THE CO-ORDINATOR-GENERAL OF PUBLIC WORKS, BRISBANE, QUEENSLAND, AUSTRALIA
TULLY FALLS HYDRO-ELECTRIC PROJECT
SPECIFICATION NO. TF/5—FENSTOCK AND HAULAGE
AND
SPECIFICATION NO. TF/6—TUNNEL AND SURGE TANK

Prospective Tenderers for either of the above Contracts are hereby advised that the final date for receipt of Tenders has been extended from July 2nd, 1951, to September 3rd, 1951.

C. E. PETERSEN Secretary
Department of Co-Ordinator-General of Public Works

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
EMPLOYMENT WANTED & INDIVIDUAL SELLING OPPORTUNITY undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.25 a line an insertion.

INFORMATION.
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $14.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured 7/8 inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS received by May 25th at the New York Office, 330 W. 42 St., N. Y. 18, will appear in June 7th issue subject to space available.

DESIGNERS

We pay among the highest rates in the industry
Our employees share annually in company profits

Must be willing to relocate in Cleveland
Permanent employment
Our continuous expansion and growth offers many fine future opportunities.
We need Designers experienced in Blast Furnace, Steel Mill or Oil Refinery Design.
Men with specific experience, training and background in the following classifications:

STRUCTURAL DESIGNERS
CONCRETE DESIGNERS
ELECTRICAL DESIGNERS
ENGINEERING DESIGNERS
CHECKERS

Our working conditions are the best; our offices are air-conditioned and well-lighted.
We want men who have a genuine desire to develop and advance.

Write to

ARTHUR G. McKEE & COMPANY

2300 Chester Avenue **Cleveland 1, Ohio**

ENGINEERS AND DRAFTSMEN

Experienced in architectural, electrical controls, lighting and power, structural, ventilation, heating, piping or material handling work for Consulting Engineer's office.

J. FRUCHTBAUM
633 Jackson Bldg.
Buffalo, New York

WANTED
SALES ENGINEER
Or trainee for construction equipment business in St. Louis. Prefer young or middle-aged man interested in selling and buying, mostly by correspondence, preferably with some civil and/or mechanical engineering education. Reply in detail outlining education and background.
P-9805, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

PLANT & MAINTENANCE ENGINEER
A graduate engineer with broad experience in maintenance & plant engineering (work in chemical industry helpful but not essential). Willing to travel in U. S. To insure attention full details of age, experience, salary expected and when available for work must be given. Write Box ENR 1169, 221 W. 41 St., N. Y. 18, N. Y.

HELP WANTED MALE
Estimators proficient at surveying all divisions and types of construction. Age 25-35, non-drinkers and non-smokers. Dividend rating $5,000-15,000 plus PROFIT SHARING.
CONSTRUCTION SURVEY CO.
101 Park Ave. New York 17, N. Y.

SANITARY ENGINEERS DESIGNERS DRAFTSMEN

Experienced men wanted by Consulting Engineers Office—State qualifications age experience salary and date available in first letter. Replies held strictly confidential.
P-9485, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

CIVIL SERVICES

CIVIL-SANITARY Engineers. Several positions open about June 1, 1951. For design of sewers and sewage treatment plants in connection with master planning for Cleveland metropolitan area. Excellent opportunities and possibilities of permanent employment. Please give resume of education, experience, salary requirements and data available in reply. P-9783, Engineering News-Record.

CIVIL ENGINEER. Thorough knowledge of and training in hydraulics. Hydraulics Design experience in connection with dams and pipe lines. Water Bureau, Hartford, Conn.

POSITIONS VACANT

WANTED MECHANICAL Engineer, age 35-50, should have had at least ten years experience in material handling, preferably in hoist equipment field. Also should have supervisory ability. Write full qualifications and salary requirements. P-9765, Engineering News-Record.

ESTIMATOR WANTED—A thoroughly established general contractor is looking for an estimator. The work is chiefly building construction including factories, commercial buildings, schools, etc. Write giving full education and experience. Also give references. A snapshot will be helpful. Location—Western New York. P-9794, Engineering News-Record.

DESIGNERS, ENGINEERING Draftsmen for established consulting firm designing sewers, pumping stations, sewage treatment plants, water supply systems, etc. Layout and detail drafting on structures, piping, reinforced concrete. Structural and hydraulic computations, specifications. Give full particulars. Location, New York State. Our employees know of this advertisement. P-9755, Engineering News-Record.

TWO HIGHWAY Engineers wanted, experienced in surveys, design, and preparation of plans. State qualifications, availability and Military Status. Write Box 351, New Philadelphia, Ohio. Phone 42364.

(Continued on page 122)

SALARIED POSITIONS $3,500—$35,000
We offer the original personal employment service (established 41 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.
R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

ESTABLISHED 57 YEARS

POSITIONS IN

Engineering	Appraisals
Architecture	Chemistry
Manufacturing	Teaching
Contracting	Mining
Metallurgy	Sales

Our many years of specializing in Engineering and Technical help enables us to number among our clients the most desirable employers and to place at your disposal a most attractive method of getting in touch with parties needing men of your qualifications.

THE ENGINEERING AGENCY INC.
53 W. Jackson Blvd. Chicago 4, Ill.
Room 1662 Harrison 7-4056

Additional Position Vacant Ads on pages 121 & 122

ENGINEERS

STRUCTURAL **PIPING**
ELECTRICAL **MECHANICAL**

Southern California

Our expanding workload presents many opportunities for advancement in a company with over 40 years' experience. Positions are open in the engineering and design of complete oil-refineries and chemical-plants.

Please send a detailed summary of your education, experience, and personal history to our Personnel Department. Also include a recent photo. All replies will be kept confidential.

C F BRAUN & CO
Engineers Fabricators Constructors Consultants
1000 South Fremont Avenue Alhambra, California

CONSTRUCTION SUPERINTENDENT

Experienced in construction of Blast Furnaces. Must be a good organizer, able to handle labor and qualified to exercise executive ability. Compensation commensurate with ability of individual.

Write and furnish full information regarding education, training, chronological details of experience, age, salary expected, etc. All replies will be considered strictly confidential.

P-9734, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

CONSTRUCTION SUPERINTENDENT & ENGINEER
Preferably a technical college graduate experienced in building construction and equipment installation. Experience in chemical plants beneficial. Willing to travel in Continental U. S., usually near a large industrial center. To obtain more than casual consideration your letter must give full details of experience, age, salary expected and when available. No contacts will be made with present employer without applicant's consent. **Write Box ENR 1178, 221 W. 41 St., N.Y. 18, N.Y.**

ENGINEERS

ELECTRICAL - MECHANICAL - STRUCTURAL

Openings in Ohio and New York offices offering long term employment with good salary for qualified Group Leaders, Designers and Draftsmen experienced in one or more of the following phases of industrial plant design:

Electrical	Power, lighting layouts and electrical controls.
Mechanical	Plant layout, process piping, conveyors, heating and ventilation, boiler houses, process equipment layout, refrigeration, plumbing, tanks and vessels, packaging equipment, special machinery and equipment.
Structural	Structural steel and reinforced concrete.

Please submit complete resume stating experience, education, salary required and availability date.

THE H. K. FERGUSON COMPANY
Engineers and Builders
The Ferguson Bldg. 1783 E. 11th St. Cleveland 14, Ohio
19 Rector Street New York 6, N. Y.

WANTED
ENGINEERS
. . . to train as . . .
Industrial Consultants in Fire Protection Engineering

full pay to start—complete training field engineering with top U. S. and Canadian industry—usual pension and other benefits. Permanent.

Write complete qualifications to
P-9609, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

ENGINEERS
Construction

One experienced Office Engineer and one experienced Field Engineer on large Hydroelectric project in Idaho. State salary expected, experience, and date available with application.

P-9736, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

CONSTRUCTION SUPERINTENDENT

Experienced in construction of Open Hearth Plants. Must be a good organizer, able to handle labor and qualified to exercise executive ability. Compensation commensurate with ability of individual.

Write and furnish full information regarding education, training, chronological details of experience, age, salary expected, etc. All replies will be considered strictly confidential.

P-9735, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

POSITIONS VACANT
(Continued from page 120)

WANTED—ESTIMATOR for General Construction firm located in the upper Middle-West area. Must be experienced in industrial and commercial construction work. State qualifications and pertinent data including salary expected. P-9767, Engineering News-Record.

ESTIMATOR-BUILDING Construction. Old established contracting firm, located in Chicago has permanent position for well-qualified man. Salary open. Write details to P-9802, Engineering News-Record, 520 N. Michigan Ave., Chicago, Ill.

CONTRACTOR'S ENGINEER—Field Superintendent by a medium-sized general contracting company doing heavy construction work including bridges, highways, buildings, etc. Located within suburbs New York City. Applicant must have previous experience with a general contractor taking off quantities, preparing estimates and supervising projects in field to completion. Maximum age forty years. Must assume administrative responsibility from bidding to completion of projects. In reply state age, experience, reference, education, salary expected and when available. P-9810, Engineering News-Record.

WANTED: SUPERINTENDENT for Rock Quarry. Permanent position. Salary open. L. G. Everist, Inc., Sioux Falls, South Dakota.

CIVIL ENGINEERING Technicians: Laboratory and field men, experienced in soils, concrete and asphalt. Defense projects in East, Midwest, South. Forward complete details to Toledo Testing Laboratory, Toledo, Ohio.

LABORATORY AND Field Supervisor: Experienced in soils, concrete and asphalt, must be registered P.E. Furnish complete details to Toledo Testing Laboratory, Toledo, Ohio.

DRILLERS: EXPERIENCED in soil borings and rock drilling. Work located in Ohio and Michigan. Permanent work for qualified drillers. State age, experience and salary. Toledo Testing Laboratory.

WANTED BY large heavy construction company doing international business an executive competent to estimate and negotiate large construction work. Must have proven experience in relationships both with associates and subordinates. Age under 50, preferably about 40. Technical engineering education preferred. P-9847, Engineering News-Record.

ESTIMATOR AND Quantity Man: Permanent, industrial buildings, position northern New Jersey, state age, experience, salary desired and when available. P-9845, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT: Industrial buildings, must be top-man, position northern New Jersey, state age, experience, salary desired and when available. P-9846, Engineering News-Record.

DRAFTSMAN OR engineer, mechanical, experienced on industrial piping and equipment, office and field work. Write P. O. Box 1106, Roanoke, Va.

ENGINEER, CIVIL, experienced on construction work in office and field. Write P. O. Box 1106, Roanoke, Va.

BOOKKEEPER, EXPERIENCED, with ability as typist. Write P. O. Box 1106, Roanoke, Va.

STRUCTURAL DRAFTSMEN WANTED

For detailing and checking. Prefer men with 3 to 5 years experience with companies which fabricate structural steel. Write or apply in person.

DRESSER EQUIPMENT CO.
Ideco Division
675 Michigan Avenue, Columbus, Ohio

WANTED
BRIDGE DESIGNERS
DESIGNER DRAFTSMEN
RESIDENT HIGHWAY ENGINEERS
Experienced men wanted. State qualifications, age, salary and date available in first letter. Location, Western Pennsylvania.
P-9592, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

GOOD POSITIONS FOR
ENGINEERS, DETAILERS AND DRAFTSMEN
ON SEWAGE PROJECTS
Apply to
GANNETT FLEMING CORDDRY & CARPENTER, INC.
Harrisburg, Pa.

POSITIONS WANTED

BUILDING CONSTRUCTION Superintendent or General Superintendent 25 years experience. Thoroughly familiar with all types of Building Construction. References. E. Harold Bowen, 3450 NW 79th Street, Miami 38, Florida.

CONSTRUCTION EXECUTIVE, 50. Capable of managing an entire business. Thoroughly experienced with buildings, machinery installation, process piping and heavy construction projects. Actual superintendent and project manager background on large jobs. PW-9580, Engineering News-Record.

REGISTERED ENGINEER, experienced, Master's Degree, desires position in hydraulic-hydrologic field. Eastern states or foreign. PW-9575, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, concrete pipe manufacture, considerable experience, machine and cast pipe. PW-9733, Engineering News-Record.

CIVIL ENGINEER, age 38, Married. B.S. now completing M.S. hydraulic engineering major. 10 years experience water power and flood control, 2 years college instructor, Assoc. A.S.C.E. PW-9761, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT and Engineer desires work in New England. Experienced industrial plants, housing, roads, sewers, docks, bridges. Skilled estimator. PW-9775, Engineering News-Record.

DIVER-FRANK HEFLING, formerly Chicago, San Francisco; US or foreign work. Passport. Capable of deep water, 17 yrs. const., salvage, survey, special jobs outfitted. Record underwater torch. Improved telephone equipped gear, safety power compressor, single unit lifeline. Experienced designer air lift dredging, dewatering. Miami, Florida, 268 S.W. 8th St., Phone 3-8089.

BUSINESS MANAGER. Will take complete charge of Contractor's office. Can handle new business, estimating, purchasing, supervision of field work. 25 years experience. Any location. PW-9785, Engineering News-Record.

WRECKING ESTIMATOR. Yard Manager, experienced, capable, free to travel. Available June 1st. PW-9821, Engineering News-Record.

CONSTRUCTION MANAGER or Superintendent. Solid background of experience in construction of power plants, steel mills, sugar mills, paper mills, heavy industrial projects and commercial buildings in United States and Latin America. Speak Spanish. Interested only in long term employment at top salary. Now employed, available 30 days. PW-9807, Engineering News-Record, 520 North Michigan Ave., Chicago, Ill.

PROJECT MANAGER or Project Engineer. Wide experience in design and construction of power plants, steel mills, various industrial projects. Successful organizer and administrator. Presently employed, available 20 days. PW-9808, Engineering News-Record, 520 North Michigan Ave., Chicago, Ill.

STRUCTURAL ENGINEERING

A Course of Instruction by Mail

FOR FORTY YEARS our courses have helped thousands to better positions and to pass State Board Examinations.

Information sent without obligation. Write today.

WILSON ENGINEERING CORP.
College House Offices - Dept. E.
Harvard Sq. Cambridge, Mass.

SEWER CONSTRUCTION Foreman, Italian, 25 years experience, qualified, capable: Will be available soon. PW-9836, Engineering News-Record.

EQUIPMENT SUPT., Mechanical Operating Engineer, over 25 years experience with erection, repair, maintenance heavy industrial, power plants, pumping stations, marine equipment. P. Cornwell, 6824, Colonial Rd., Brooklyn 20, N. Y., TErrace 6-6236.

DESIGN ENGINEER, B.S. and M.S. in C.E. Assoc. member ASCE, New York State license. Twenty-six years experience in design of harbor structures, military bases, industrial plants, power plants and transmission lines, sanitation projects with both design offices and contractors. Seeking responsible design connection. PW-9844, Engineering News-Record.

PATENT ATTORNEYS

Patent Practice
before U. S. Patent Office • Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommel, Registered Patent Attorneys, Suite 454, 815 15th Street, N.W., Washington 5, D. C.

BUSINESS OPPORTUNITIES

For Sale:
Civil Engineering & Surveying Business in growing industrial community in central New York. Write John D. White, broker, Paul Bldg., Utica 2, N. Y.

Professional Engineer
in early thirties seeks active and financial participation with established construction company. Can offer contacts, capital and experience. BO-9788, Engineering News-Record.

SPECIAL SERVICE

Right of Way
Clearing Wanted. By contract. Will furnish men and equipment. Joe Ralick, Box 186, James City, Pa.

FOR SALE

Carl Zeiss
Engineer's and Builders' Level for sale. Al condition with accessories, tripod and case. Call 8-10 a.m. and evening YOnkers 9-6789W, otherwise: MOunt V. 4-1735.

WORK WANTED
STRUCTURAL & MECHANICAL DESIGN
Licensed Engineers Professional and Structural—20 Years Experience in Design of Steel Structures and Machinery.
STEEL STRUCTURES INC.
5900 S. Ashland Ave. Chicago 36, Ill.
Phone-Wallbrook 5-1750

ESTIMATING SERVICE
Any Trade and Type of Project
Literature and Sample on request
Construction Survey Cooperative
101 Park Ave., New York 17, N. Y.
MUrray Hill 5-7317 Founded 1922

STRUCTURAL STEEL ERECTION
Buildings, Bridges, and Power Houses 40 derricks and hoists—24 cranes available
Large quantities of erection equipment
KARL KOCH ERECTING CO., INC.
362 CASANOVA ST. Kilpatrick 2-3800 BRONX 59, N. Y.

L.B.SMITH INC.

OFFERS

AIR COMPRESSORS

Schramm 105 cubic foot gas powered compressor on 4 steel wheels.
Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.
Gardner-Denver 160 cubic foot gas powered compressor on 4 steel wheels.
Worthington 210 cubic foot, two-stage, air-cooled, on steel wheels with Hercules diesel.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.
Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.

QUARRY EQUIPMENT & BINS

3018 Cedarapids roll.
10x7 Allis-Chalmers Blake type jaw crusher.
#1 Cedarapids Kubit impact breaker.
42" x 24' revolving screen.
18" x 90' bucket elevator.
60-ton, 2-compartment, 8'x18' storage bin with clamshell gates.
Conveyors—18"—24"—30"—36". Also belt.

TRUCKS—TRAILERS

1½-ton Ford with any body.
2½-ton GMC, rebuilt.
1949 White Model WC26 dump trucks, new condition.
2000-gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.
2,000 gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

GASOLINE AND DIESEL ENGINES

Buda, Hercules, Hill diesels, rebuilt.
New and rebuilt Murphy diesels.
GM 6 and 12 cylinder diesels, practically new.

SHOVELS—CRANES

Lorain 55B gas powered crane.
Brownhoist 1-yd. gas shovel and crane.
Lorain 30 combination ½ yd. shovel, hoe & clam.

SHOVEL & CRANE ATTACHMENTS

Lorain 41 shovel attachment new condition.
Lorain 40A shovel attachment complete.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Lorain 40 Hi-Lift shovel attachment.
Bucyrus-Erie 1½-yd. rock bucket.
Lorain 75 fairlead.

Backhoe Buckets & Attachments

¾-yd Lorain, 40, LBS #8105. 44" cutting width, teeth, sheave.
28" outside width solid bottom type LBS #4377, good condition.
¾-yd Amsco 40" cutting width, LBS #8101.

CLAM—DRAG—SCRAPER BUCKETS

NEW TAGLINES

McCaffrey Model 848 for 1¼ to 2-yd crane.
McCaffrey Model 836 for ¾-yd to 1-yd crane.

SHOVEL DIPPERS

Lorain 41, ¾-yd. LBS #7433, rebuilt.
New Lima 1-yd. Amsco, LBS #2295.
Bucyrus-Erie 1¼-yd gas air, LBS #3782, fair.
Lorain 75B, 1½-yd. manganese bucket, LBS #8538.
Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS #2280.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS #3381.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS #3783.
Esco 2½ yd cast weld dipper with bail & teeth

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Concrete Finishers

Jaeger type "L" double screed, 10½'-12½', rebuilt.
Heltzel 10'-12' finisher, rebuilt.
Blaw-Knox gas-electric 10½'-12½', rebuilt.
2 Koehring 10'-12', rebuilt.

Concrete Road Forms

830'—Truscon 7"x8" forms, with stakes.
1380'—Heltzel 7"x8" forms, with stakes.
1220'—Heltzel 9"x8" forms with stakes.
1430'—Heltzel 10"x8" forms, with stakes.

Fine Grade Machines

Flynn surgrader 10'-12', rebuilt.
R.B. Fine Grader for 21' width, rebuilt.

Form Graders—2 of each

Cleveland formgrader, new condition.
Carr formgrader, new 1944, rebuilt.

WELL DRILLS & TOOLS

Sanderson-Cyclone #42 well drill, new.
Sanderson-Cyclone #44 well drill, new.
Bucyrus-Erie 21W on C30 International chassis.
Bits—Stems—Bailers—Sockets—Etc.

DITCHERS

Barber-Greene 44C Trenching Machine 18" to 24" cutting width, 7' depth.

GRADERS

New Warco D78 tandem driven grader, 12' blade, V-type scarifier, 13.00x24 tires all around, 24,500 lbs., International UD14A diesel engine.
Austin Western 77 tandem drive, scarifier, 12' blade, gas power, hydraulic controls.

Phone **HARRISBURG, PA. 7-3431**

LASTING • BONAFIDE • SERVICE
L.B. SMITH, INC.

L.B.SMITH INC. CAMP HILL, PA. SUBURB OF HARRISBURG

WE OWN THE EQUIPMENT WE ADVERTISE

D-6 Cat. Hyd. Blade 10' new '42 guaranteed $2975
TD-9 Hyd. Bucket Loader, new '46 4950
Cat. Tractor 2 Ton, new '50, gas drive 350
Butler Solid Rubber Tire Scoop ¾ yd. 800

DREDGES

8" 20'x40' and 18"x36' gas driven 25' ladder 18000
10"x12" Cooper Bessemer Diesel 12500
12" 2 D 13000 cats, 20'x64' 22500
6 yd. Steam Dipper Dredge & Tender 60000
Bucket type dredge on steel hull 155'x44'x8½' Offers

DIESEL ENGINES

HERCULES 150 HP at 1800 DWXDS 1250
HALL SCOTT Invader, Mod. 168, 280 HP, gas 750 up
KERMATH 500 HP, 720 RPM, like new, gas 1500
G M. 500 HP, 720 RPM, like new 7500
PACKARD 1600 HP, new, gas 3000

JAW CRUSHERS & MISC.

SUPERIOR McCULLY GYRATORY CR. #5, #7½ & 42"
NEW HOUSE #7 Allis Chalmers, Style B
CEDAR RAPIDS, Sec. 30T per H. like new
Complete Crushing Plant w/ Reliance 15x30" Cr.
Steel Boom Dipper Stick & 1¾ yd. dipper
GRAVELY BLOCK MAKING MACHINE, 4", 8", & 16" 3500

AIR COMPRESSORS

I.R. 900 CFM Imp. Type 10, 150 HP, new '26 6500
I.R. 628 CFM Imp. Type 10, XHB2, Duplex .. 3800
I.R. 600 CFM Imp. type 10, XCB, 100# 3250
GARDNER 450 CFM 100# psi, 2 stage 1850
I.R. 400 CFM Imp. ERI cl. 40-80# psi 2500
I.R. 320 CFM Type P40, 100#, 75 HP, 3 stage 1950
SULLIVAN 160 CFM 100# psi, Mod. WG6 .. 1850
CURTIS 100 CFM 2 stage, reblt w/25 HP .. 975
I.R. 20-35 CFM ERI, single cyl 375

GENERATORS

LEROI WESTINGHOUSE 25 KVA 1/60/120 NEW, Mod. 282 1950
200 KW Gen. A.C. 3/60/440 2 G. M. Diesels 7000
WINTON D.C. 15 KW Gen. 240 V. 1944 1500
50 KW SUPERIOR Gen. Mod. A6, complete 5, 8, 10, 15, 18 & 35 KW Generators available 2950

EVEREADY SUPPLY CO.
E. J. McCALLUM, JR.
805 Housatonic Ave. Bridgeport, Conn.
4-9471

CONTRACTORS SURPLUS EQUIPMENT

FOR SALE

3—LeTourneau LP Scrapers
1—Caterpillar D-6 Tractor with LaPlant Choate Hydraulic Angle Dozer, Serial #5 R 4414
1—Caterpillar D-7 Tractor with Dozer and Double Drum Power Control Unit, Serial #3 T 2863
1—Caterpillar D-8 Tractor with Dozer and Double Drum Power Control Unit, Serial #2 U 1003
1—Westinghouse Portable Generator Set, Serial #UC 668
1—Kohler Portable Generator Set, Serial #138607
1—Seaman Pulvic Mixer, Serial #M 1185
2—Ingersoll-Rand Compressors Model 315 Diesel
1—Hercules 2 Ton Three Wheel Roller, Serial #606
1—Buckeye Spreader, Serial #10-2466
1—Ditson Chain Saw Model KB2A
1—Ingersoll-Rand Wagon Drill Model FM-2
1—Cement Bucket, 1½ yd. Capacity
1—Steam Jenny Cleaner
1—Jaeger, Model 10-S Cement Mixer
1—3" Sterling Centrifugal Water Pump
1—4" Sterling Centrifugal Water Pump
1—4" Carter Centrifugal Water Pump
1—1" Marlow Single Action Diaphragm Water Pump
1—1" Carter Double Action Diaphragm Water Pump
1—6" Carter Centrifugal Water Pump
1—1950 Autocar Tractor, 200 H.P. Cummings Diesel Model DC100TN
1—50 Ton Rogers 16 Wheel Trailer, Model DW-50
1—20 Ton Rogers 8 Wheel Trailer, Model H-20-D

R. F. CARPENTER, INC.
ALBURG, VERMONT

HOISTS-TOWERS
RENT-SALE
in stock

Single or double drum
Gasoline—Electric—10–75 H.P.
Swingers if Desired

Tubular Towers—To 300 Ft.
Buckets & Hoppers Available

RENTAL SERVICE CO.
(Div. Service Supply Corp.)
4th & Courtland Sts.
Philadelphia 40, Pa.

TRACTORS

International TD-24 Diesel Tractor #TDE-1937 and Cable Control Unit #79114.
International TD-24 Diesel Tractor #836.
International TD-24 Diesel Tractor #1527 w/ Bucyrus Erie Cable Control #1P29B6466 and Push Plate.
International TD-24 Diesel Tractor #1699 w/ Bucyrus Erie Cable Control #1P2862348.
International TD-24 Diesel Tractor #526 w/ Bucyrus Erie Cable Control #1P2966971 and Push Plate.
International TD-18 Diesel Tractor #TDR-11911 w Heil Cable Control Model S2, #2907.
International TD-18 Diesel Tractor #9466T4 and Heil Cable Control, #RC-2675.
International TD-18 Diesel Tractor #RM-11728 and Heil Cable Control, Model S2, #2505.

HAULING UNITS

"Caterpillar" DW-10 Diesel Tractor #1N-2812 with "Caterpillar" W-10 Wagon #3R-5236.
"Caterpillar" DW-10 Diesel Tractor #1N-2811 with "Caterpillar" W-10 Wagon #3R-5235.
"Caterpillar" DW-10 Diesel Tractor #1V-87 with "Caterpillar" W-10 Wagon #3R-5332.
Euclid Tractor #29FTD-4566, Engine #GMC 6A3854 with Euclid Wagon #58W-3786.
Euclid Tractor #29FTD-4567, Engine Cummins NH1044-2 with Euclid Wagon #58W-3792.
Euclid Tractor #29FTD-4565, Engine GMC 6A-9358 with Euclid Wagon #58W-3785.

SCRAPERS

LeTourneau Model FU Scraper #S-9348.
LeTourneau Model FU Scraper #S-9347.

DRAGLINES

Lorain Model L-41 Dragline #14925, equipped with "Caterpillar" Model D-4600 Diesel Engine #58-93381P, ¾ yd.—Crane Clam and Dragline.
Lorain L-820 Dragline #16220, powered by "Caterpillar" D-13000 Diesel Engine with Kohler Light Plant—3 cu. yd. drag bucket and 50' boom.

GRAVEL PLANT

Pioneer Gravel Plant Portable, consisting of 24" x 40" Conveyor, grizzly 6' feed hopper with 3' x 6' buzzer screen, 1" sq. openings, powered by VE-4 Wisconsin Gas Engine, Hydraulic cradle truck

LIGHT PLANTS

"Caterpillar" Portable Light Plant, Model D-3400 Diesel Engine #9J-4131 w Louis Allis 15KW Generator #15KL68, single phase, 60 cycle, 110/220 volts, w/light tower and 4 floodlights, mounted on rubber tired trailer.
"Caterpillar" Portable Light Plant, Model D-311 Diesel Engine #4V-5151, w Louis Allis Self Reg. Generator 21KW, 20NL-110, 3 phase, 60 cycle, 110-220 volts, w/light tower and 4 floodlights, mounted on rubber tired trailer.
This machinery is in FIRST CLASS A-1 CONDITION—for immediate delivery—F.O.B. present location and subject to prior sale.

JOHN FABICK TRACTOR CO.
3100 Gravois Ave. St. Louis 18, Mo.

TRENCHERS

CLEVELAND 95—Running Condition—$1600.00
PARSONS Model 310—A-1 Condition
BUCKEYE Model 160—A-1 Condition
BARBER-GREENE Side Boom Ditcher
BUCKEYE 406—Like New

CRANES

22-B Diesel Backhoe
BAY CITY Model 450—¾ Yard
NORTHWEST 6 Diesel Shovel—$16,000.00
NORTHWEST 25 Diesel Drag & Crane—40'
INSLEY K-12 Backhoe—Diesel
NORTHWEST 80-D Shovel 12900 Series

TRACTORS

HD-5 Front End Loader
CATERPILLAR D-2 Front End Loader
CATERPILLAR D-8 With 8A Blade—#2U-7358
INTERNATIONAL TD-9 & T-6 With Angle Blades
D-7 Factory New Angle Blade
WARCO Heavy Duty Grader—$3500.00

A. C. R. COMPANY
19615 Nottingham Rd. Cleveland 10, Ohio
Phone: KEnmore 1-8000

FOR SALE

1 28 Cu. Ft. Knickerbocker Building Mixer with Continental Gas Engine & Paver Type Skip—$3800.00

1 27-E Multi-Foote Paver with Continental Gas Engine, Boom & Bucket—$3500.00

Both in excellent condition. May be inspected at our warehouse.

THE DAY & MADDOCK CO.
8201 Almira Ave. Cleveland, Ohio

DIESEL GENERATOR SET

120 KW AC 3 phase
60 cycle 120/208, 240, 480 volt
Complete new unit available for immediate delivery.

FRANTZ EQUIPMENT COMPANY
50TH & WYNNEFIELD AVENUE
PHILADELPHIA 31, PENNA.
GReenwood 7-7200

FOR SALE

DREDGES

H. P. GUION
303 W. 42nd St., N. Y. 18, N. Y.

"BARGAIN"

⅜ yd. Byers Crane-Pullshovel, ready for work, completely overhauled, cleaned and painted. Photograph furnished on request.

HUNTER TRACTOR & MACHINERY CO.
327 S. 16th Street Milwaukee 3, Wis.

FOR SALE

Reliance Crushing Plant

15" x 30" Crusher—38' Bucket Elevator
58" x 17' Roller Screen—100 Ton Capacity Bin
2 Gase. Engine Power Units

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.

DRYER: Allis Chalmers single shell, 10 ft. x 90 ft., heavy duty, plate thickness. 22.95 lbs. per sq. ft., complete with or without the following:
Coal fired furnace with Hoffman Pirate, Pirete Stoker, with grates, buckstays, all necessary steel, etc.
Dust Collector, Western Precipitation, Multicione size 726.
Two size 25 Western scrubbers and spray eliminators.
Exhauster, Clarage #41, with or without 150 H.P., General Electric Motor, type I, form M, 695 RPM, serial No. 817360, 440 volt, 9 groove pulley.
One G.E. 200 H.P. Motor, 3 bearing type, 585 RPM, 2200 volt, model MIN691, serial No. 1420792, 11 groove pulley.
One A.C. Control Panel.
One Drum Controller.
14—G.E. Resistor Boxes.
One Bristol Recorder model 431 Pyromaster.
One Leeds Northup Recording Controller.
One Pug Mill or 12" dia. shaft paddle Mixer, 10'0" chain drive.
All located on Iron Range in Minnesota.

LOG WASHER: 25 ft., heavy duty type, with 2 logs, 6" x 6" x 3/4" angles, complete ready to operate.

COMPRESSOR: Worthington 2 stage, 29-23 ½x 21, type DC2, 600 H.P. synchronous motor, 3 phase, 60 cycle, 440 volt, 180 RPM, 100 lbs. pressure, complete with auxiliary equipment. In operation now, available immediately.

BOOT BUCKET ELEVATORS: 2—63 ft. c-c, manganese steel chain, buckets 16" wide.

SCREW CONVEYOR: 12" x 22 ft. with center bearing, 87 RPM cap. 30 TPH.

DIESEL MOTOR: 122 H.P. Caterpillar D13000 complete with clutch, V-belt pulley, and spare parts.

MAGNETIC SEPARATOR: Dings, Crockett type, 12" belt, 250 volt, with 440 volt, A.C. operating motor.

BLAST HOLE DRILL: Bucyrus Erie 27-T, diesel, 6-8¼" bit and tools.

DRAG SCRAPERS, CRESCENT BUCKETS: 1—Sauerman 2 yd. Drag Scraper outfit complete, without 75 H.P. motor. 1—Sauerman ¾ yd. capacity complete with 30 H.P. motor. 1—Sauerman 1 yd. capacity complete with diesel motor.

LOCOMOTIVES: 2—50 ton, 4 wheel, saddle tank, Switching Locomotives, with National Board boilers. Excellent condition for immediate service and delivery.

BOILERS: 1—Erie City 150 H.P., ASME, return tubular, 4" tubes, 150 lbs. working pressure, pin hole grates and all fittings. 2—220 H.P., 160 lbs. pressure, National Board, 3 drum, low head, complete.

DERRICKS & HOISTS: 150 ton capacity, 180 ft. mast, 160 ft. boom, 65 tons @ 140 ft., with or without 125 H.P. American electric, 3 drum Hoist and 30 H.P. swinger. 1—15 ton Guy Derrick, 100 ft. mast, 90 ft. boom, with or without gas or electric hoist, double drum, with swinger. 2—15 ton Terry Stiff Leg, 75 ft. boom, complete with bullwheel, legs, sills, blocks, etc.

MINE HOISTS: Single and double drum, 150 H.P. to 2500 H.P.

BRIQUETTING PRESS: Capacity 18 tons per hour, 33" dia. rolls.

PUMP MOTORS: 2—1000 H.P., 1800 RPM, 2300 volt, complete with automatic control equipment. NEW, UNUSED.

SHOVELS & DRAGLINES: 1—P & H model 1600, electric, 6 yd. capacity. NEW condition. 1—Marion 151-M electric, 6 yd. cap., combination Shovel and Dragline. 1—Bucyrus Erie 120-B, 4 yd. electric Shovel; also, one Bucyrus Erie 170-B, 6-½ yd. electric, 3 phase, 60 cycle, 2200 or 4000 volts. 1—Lima 1002 Dragline only 2-½ yd. cap., 80 ft. boom, diesel. 6—Crawler tread, diesel powered Cranes, late type, current models, P & H, Northwest, Lorain, Osgood, 2 yd. and 2-½ yd. capacity, with 60 to 80 ft. booms, wide treads and long cats.

TRUCKS: Euclid 15 yd., model T, end dump, 22 ton capacity, 275 H.P. Cummins motors.

CRUSHERS, GYRATORY: Various makes, size 12" x 44" up to 42" x 134".

CRUSHERS, JAW: Various makes, 10" x 15" to 48" x 60".

CRUSHERS, REDUCTION: Symons 2 ft. standard bowl, Telsmith 2 ft. and 3 ft. Gyrasphere, Traylor 4 ft., type TY.

CRUSHER SPECIALS: Allis Chalmers Superior 30 and one 7-½ K Gyratory. Farrel 18" x 36" and one 24" x 36" Jaw.

CLASSIFIER: WEMCO Simplex size 78" x 28-½ ft., complete.

SCREEN: Simplicity 5 ft. x 12 ft., heavy duty, Scalping Screen for 11 material.

PULVERIZERS: 7' x 9' Ball Mill with 250 H.P. motor. Marcy 7' x 16' Rod Mill with 200 H.P. motor. Hardinge 5' x 22" Ball Mill with 30 H.P. motor. Bradly Giant Griffin Mill.

A. J. O'NEILL
Lansdowne, Pa.
Phila. Phones: Madison 3-8300—3-8301

In real life the heroine in the buckboard doesn't outdistance the villain on horseback. Neither does the poorly equipped contractor outdistance the one who has plenty of MODERN Equipment from E. C. A.

CRAWLER CRANE

1—¾ yd. Model LS-75 Link Belt crawler crane, Ser. No. 1592. Equipped with 55' boom and 15' jib, powered by Waukesha gas engine size 4¼x4¾", Mdl. 6MZR37E, 1250 RPM. EXCELLENT CONDITION.

Prices of these Compressors have been reduced to clear room for inventory stock in our Rental Department.

PORTABLE—TWO STAGE

2—315' Chicago Pneumatic #28946 and 40086, 6 cylinder Hercules gasoline engines, solid rubber and pneumatic tires. Price $3,000 00 each

1—315' LeRoi Mdl. 315G #209350, RXI gasoline engine #209325, 4 pneumatic tires. Price $3,000.00

1—210' Chicago Pneumatic #34298, 6 cyl. Hercules gasoline engine. Price $2,400.00

1—210' Gardner Denver #87582, Buda FRH gasoline engine, 4 pneumatic tires. Price $3,500.00

1—160' Chicago Pneumatic #32689, 6 cyl. Hercules gasoline engine. Price $1,800.00

CONVEYOR

1—24"x104' Barber Green trough type conveyor, 10 HP 220-440 V, 3-ph, 60-C motor, without belt. Price $1800.00

MIXERS—CONCRETE

1—10S Koehring Dandie Mixer, 4 cyl. air cooled engine, 4 steel wheels, side loader and water tank, 4000#. Price $1000.00

1—7S Jaeger Mixer Model 7EL, 2 cyl. Hercules engine, 2 pneu. tires, side loader and water tank, 3800# Price $850.00

TRENCHERS

1—Mdl. 200 Parsons Trenching Machine, Ser. No. 1774, powered by 6 cyl. Waukesha gas engine, mtd. on crawlers, with buckets to cut trench 21" wide up to 5'6" deep. Wheel type. New in 1947.

1—Mdl. 12 Buckeye Trencher, Ser. No. 12, crawler mounted, powered by 6 cyl. Buda gas engine, will dig 24" wide up to 5'6" deep. Wheel type. New in 1946.

1—Mdl. 203 Badger trencher, ladder type, Ser. No. M-39, mounted on crawlers. Has 6", 8", 12" and 24" buckets. Equipped with two booms, one for a maximum of 6'6" deep, other 9'6". New in 1947.

ALL VERY GOOD CONDITION.

Partial List Only—Send for Stock List—We Buy, Sell and Rent

CLIFTON HEIGHTS, PA.
MAdison 6-2200
30-J Church St.
Phone Worth 2-0036
NEW YORK 7, N. Y.

1155 So. Washtenaw Ave.
CHICAGO 12, ILL.
Phone NEvada 8-2400
P. O. Box 933-J
PITTSBURGH 30, PA.
Phone Federal 1-2000

EQUIPMENT CORPORATION of AMERICA

FOR SALE

45 ton G. E. diesel elec. locomotive
15 ton Davenport diesel locomotive
25 ton Browning loco crane new 1942
Two Colby 50 ton gantry cranes
110 HP American 3 drum gasoline hoist
1½ Blaw Knox clamshell buckets new
8¼ x 10 Clyde 3 drum steam hoists new
¾ yd Bucyrus 20-B diesel crane
5 new International T-D-24 tractors

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St. St. Louis 1, Mo.

LOCOMOTIVES

1—Porter 14 Ton 36" Ga Gas.
1—Davenport 35 Ton Diesel-Elec. Std. Ga.
2—Whitcomb Gas 24" Ga.—6 Ton.
Brookville—10 Ton Diesel—30" Ga.—Used 900 Hrs.
4—Plymouth 20 Ton Gas.—36" Ga.

LOCOMOTIVE CRANES

1—Ohio—30 Ton Coal Fired.
1—Ohio—35 Ton—24108—NEW 1942—Oil Fired.
1—Type G Industrial 25 Ton—Steam.

MISCELLANEOUS

2—50 Ton Hopper Cars—Excellent.
2—Covered Hopper Cars—70 Ton.
26—Hopper Cars—15 Ton—36" Ga.

A.C. 600 KW-2300/3/60 Generator direct connected Superior 800 HP Diesel. Rare Bargain.

R. H. BOYER
2005-13 W. Bellevue St. Phila. 40, Pa.
Phone Sagamore 2-7132

FOR SALE

Model 180 Single Pumpcrete
1000' of pipe and fittings
For Quick Sale—$5500.00

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.
Phone Highlands 5-6700

NEW and REBUILT
STORAGE BATTERY
LOCOMOTIVES
1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Penna.

DEPENDABLE USED MACHINES

Special,—International I-4 with Hough front end loader, used only 3 months

Universal truck crane
Lorain ⅞ yd. backhoe
Badger ditcher
Eagle bucket loader
Speeder LS-60 dragline
Lorain 40 shovel and dragline
Browning 20 ton erector's crane
All steel stiff leg derrick
Gallon Junior patrol grader
30-2, 36" gauge switches
Diamond 24 x 36 crusher
Morris 10' gravel pump
Erie 8" sand pump
Pioneer 3 x 10 screen
Eagle coal crusher

For rent,—cranes, draglines, backhoes and all accessories.

10002 Southwest Highway **TRACTOR & EQUIPMENT CO.** Oak Lawn, Ill.

1—Wayne-Crane-Dragline—8 tires—35 Ft. Boom, New 1946

1—Austin-Western-Crushing portable plant 30x18 Roll 3x8x2 Deck Screens—Conveyors, Etc. Buda Gas-Power

1—Badger Trencher—Model 203—Full Tracks—Gas Power—Hydraulic—All Attachments—New 1947—Had 30 days service

1—A.C. Patrol Tandem Grader—Model 42 Gas Power

DONALD B. MacNEAL

12100st and Loomis St. CHICAGO 43, ILL.

Telephone: PUllman 4-3411—TRiangle 4-1236

BRIDGE

FOR SALE

Railroad Plate Girder Bridge now in use as Highway Bridge with temporary timber foot bridge for pedestrians on outside of one girder. Overall length 106'. Roadway width 11'. Clear width between girders at top 15'. Loading E40 at 18,000 pounds. Located Sault. Ste. Marie, Michigan. Available for shipment. Fall of 1951.

THE TULLER CONSTRUCTION CO.
RED BANK, NEW JERSEY

FACTORY CLOSE-OUT

CRITICAL MATERIAL

BRAND NEW PORTABLE MULTI-USE **POWER SAW**

SALE!

ORIG. CRATE

SAVE $300

WAS $499.00

NOW $199.00

FOB MINNEAPOLIS, MINNESOTA

CUTS WOOD

CUTS BRICK

CUTS CONCRETE

CUTS METAL

America's greatest saw bargain! Cuts lumber to 4" thick. Briggs & Stratton 3½ H.P. gas engine. Saw cuts flue lining, transite pipes, steel sheets, copper & aluminum, etc. Does work of $1,000 worth of saw equipment. Sharpens tools. Famous make, brand new, original crates. Limited supply. Send for literature. DEPT. EN5.

A1. 1281

ENNIS SUPPLY CO.

334 1st St. N., Minneapolis 1, Minn., U.S.A.

FOR SALE

BEECH, MODIFIED AT-11

All metal nose, 58 gallon nose tank. New type landing gear drag struts. Cluster welds inspected at factory. All bulletins complied with. 5 reclining seats & card table in passenger compartment. Extra baggage space nose. Complete oxygen system. Radio consists of 200-500 Kilocycle receiver, 3-6 Meg. rec., Radio compass, (Bendix), Marker Beacon, ARC-15B Omni receiver and R89-B flag alarm glide path. ARC-5 four channel VHF transmitter & receiver. Waller 50 Watt 2 channel Trans. on 3105 & ship to shore. Total time airplane 5200 hrs. Engines 20 hrs. since Spartan overhaul. Spare engines & props. Reasonably priced. Available now due to our purchase of Lockheed Lodestar.

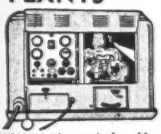
S. J. GROVES & SONS CO.
500 Wesley Temple Bldg.
Minneapolis, Minn.
Tel. LIncoln 6943

LIGHT PLANTS

Brand New! War Surplus

Signal Corps

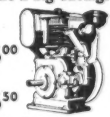
Power Unit PE 197



115v 60 cy. A.C. single ph. 5 K.W. Hobart, water cooled, 14 h.p. 4 cyl. Hercules engine. **Remote Control**, complete panel board with instruments. 150 ft. auto remote control cable with reel; 150 ft. #6 hvy. duty wire with reel; housed in metal case with replacement parts & tools. Cable with reels alone worth $400. Reg. price of unit $1900. Shipping wt. 1250 lbs. Our price, complete..... **$895.00** f.o.b. Chicago

WISCONSIN GAS ENGINES at a big saving!

Built With Special Heavy Duty Fly Wheel



Model A.B., 1.7 to 3 H.P. Wt. 60 lbs. List Price, $90.00. Special Price.... **$76.00**

Model A.K., 3 to 4.1 H.P. Wt. 70 lbs. List Price, $106.50. Special Price.... **$86.50** F.O.B. Chicago.

WRITE FOR ILLUSTRATED FOLDER

WELLWORTH TRADING CO.
1831 S. State St. Dept. ENR Chicago 16, Ill.

FOR SALE

Cat. D-8 2U Series, Cable Angledozer, $5,000.00 spent in re-building. Guaranteed.

C. P. 315 Air Compressor and Wagon Drill Cat. 8800 Engine. 1400 hours. Mounted Dodge 4 x 4 Hose, steel, bits (new & used) included. Machine like new.

Jeep Mounted Schram 105 Air Compressor: Perfect Condition.

KOFMAN'S
130 Dunlap Street Bellefonte, Pa.

"NORTHWEST BARGAIN"

1—Model 18 ½ yd. Crane Dragline rebuilt from the ground up and guaranteed the same as we would a new machine. Will pass most rigid inspection of any good operator or mechanic. Photograph furnished on request.

HUNTER TRACTOR & MACHINERY CO.
327 S. 16th Street Milwaukee 3, Wis.

JAW-CRUSHER

FOR-SALE-OR-TRADE

84x64 Allis Chalmers practically new, or will trade for two late model diesel crawler shovels 2½ yd. capacity.

V.C.L.
74 S. W. 18th Terrace Miami, Florida

FOR SALE

I BEAMS

8" I	18.4#	40'
10" I	35#	40'
12" I	31.8#	40'/48'
15" I	42.9#	40'/48'

BEARING PILES

8" x 36#	to	48#	30'/40'
10" x 42#	to	72#	30'/40'
12" x 53#	to	106#	30'/40'

ALBRO STEEL COMPANY
47-29 Van Dam Street
Long Island City, N. Y.
Stillwell 4-2720—6-5448

FOR SALE

Barber Greene Model 44C TRENCHER

Serial #47293, powered with Buda Gas Engine.
Good Condition $3,275.00

EARLE EQUIPMENT COMPANY
6331 Tireman Ave. Detroit 4, Michigan

FOR SALE

Link-belt Shovel, diesel powered, model LS80.
Buckeye Shovel, gas, model 70.
Haiss Loader, model 75W.
Ingersoll-Rand Compressor, 315', on steel wheels.

WANTED
Jaw crusher 18x36.

Reply P. O. Box 185, Providence 7, R. I.

FOR SALE

HIGH STRIPPING FRONT

for Bucyrus-Erie Model 54-B, boom 45 feet, handle 32 feet, bucket 2 Cubic yard. Complete with crowd machinery and 20,000 pound counterweight. Condition perfect.

GROVE CITY CONSTRUCTION COMPANY
Box 106, Harrisville, Penna., Phone Harrisville 579

FOR SALE

New #36-9300 Simplex Double Leverage Pipe Push & Pull Jacks with ¾" to 4" Jaws & Pilots.

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.
Phone Highlands 5-6700

FOR SALE OR RENT

1 45-ton TRUCK CRANE

Lorain Model Mc824

World's Largest Truck Crane

BUCKS COUNTY CONSTRUCTION CO.
Penndel, Pa.

TANDEM ROAD ROLLER

Buffalo Springfield KT-24B, with M-330 Continental gas engine. 8-12 ton. Like new—1950 Model. Immediate delivery.

FLEETWOOD PAVING CORP.
Carleton Ave. Mt. Vernon, N. Y.
Phone Mt. Vernon 8-2366

PORTABLE COMPRESSORS

Sales—Rental
Rental Purchase

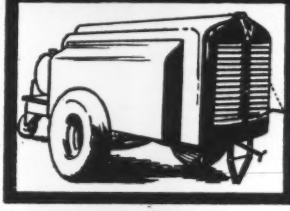
15 CFM LINDSAY (Gas) 2 Pneu
25 CFM LINDSAY (Gas) 2 Pneu
60 CFM INGERSOLL (Gas) 2 Pneu
60 CFM CHICAGO (Gas) Skids—2 Pneu
105 CFM WORTHINGTON (Gas & Diesel)
105 CFM INGERSOLL (Gas) 2 & 4 Pneu
160 CFM WORTHINGTON (Gas) Skids—4 Pneu
210 CFM WORTHINGTON (Gas & Diesel) 3 Pneu
210 CFM GARDNER DENVER (Gas) Skids 4 Pneu
315 CFM INGERSOLL (Diesel) 4 Pneu
315 CFM WORTHINGTON (Gas) 4 Pneu
315 CFM LeROI (Gas) 4 Pneu
500 CFM WORTHINGTON (Diesel) 4 Pneu

RENT—SELL—BUY

Stationary—Portable
Electric—Steam—Gas—Diesel
All sizes—All makes

SELECT REBUILTS—AMERICAN

American Air Compressor Corp.
Dell Ave. & 48th St., North Bergen, N. J.
SINCE 1902



DIESEL POWER

FOR

IMMEDIATE SHIPMENT

UNIT CAPACITIES—10 TO 1875 KVA

A.C.—50 AND 60 CYCLES

VARIOUS VOLTAGE

A PARTIAL LISTING OF OUR INVENTORY

KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1875	Fairbanks Morse	38F16	2000	300	375	Enterprise	DSG-6	450	450
1420	Fairbanks Morse	38D8⅛	1600	720	330	Superior	KNA	396	514
1250	General Motors	16-278A	1600	720	312	General Motors	8-268A	450	1200
937.5	General Motors	12-567	1080	720	312	Clark	MD-4	375	327
625	Alco	6-12½x13T	750	600	125	General Motors	3-268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	4043C	90	1200
400	Buckeye	80	480	600	62.5	Int'l Harvester	UD-18	76	1200

D.C. UNITS ALSO AVAILABLE

A. G. SCHOONMAKER COMPANY, INC.
DIESEL DIVISION, 50 CHURCH ST., NEW YORK 7, N. Y.

• STRUCTURAL STEEL SHAPES •

New and Used—Immediate Delivery

At present our inventory of steel shapes and forms includes a full line of both new and used steel especially for heavy construction work. 4" I beam to 36" Girder Beam. 14" Columns 287#/398#

BEARING PILE SECTION

Stock list on request. Write, wire or phone.

HY DRACHMAN STEEL CORPORATION

Warehouse
14-23 34th Ave., Astoria L. I., N. Y.
Astoria 8-8023; 8-4484-5

Sales Office
563 E. Tremont Ave., New York City, N. Y.
Cypress 9-5440-1

FOR SALE
Gravel Pumping Unit

Consisting of G.M. Model 6029-C Diesel Engine, Serial #6A-7648; Hetherington & Berner 8" Pump, Serial #1403; Hetherington & Berner Rotating Stone Box; Gorman Rupp Prime Pump; All Mounted on Base—Like New $6,850.00

EARLE EQUIPMENT CO.
6331 Tireman Ave., Detroit 4, Mich.

Pile Driving Equipment

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Pile Driving Accessories
Drop Pile Hammers and Caps
Steel Sheet Piling

CONTRACTORS MACHINERY Co.
2637 Southwest Blvd. Kansas City 8, Mo.
Phone Valentine 4740

SHOVELS—CRANES—DRAGLINES

Bucyrus-Erie 54-B 2½ yd. Diesel Shovel.
NEW Lima 1201 Diesel Shovel 3½ yd.
Koehring 604 Crane-Dragline 1½ yd. Diesel.
Manitowoc 2000B, 1½ yd. Diesel Crane. Excellent.
Link-Belt K-595 Dragline, 2½ yds. Diesel.
P&H 955 Dragline Diesel 90 ft. boom.
P&H 1055 Shovel, 3½ yd. Diesel. New '50.
Lima 34, Paymaster, ⅜ yd. Diesel Shovel. Excellent
Lima Paymaster ⅝ yd. Truckcrane, rebuilt, 80' Bm.
Lima 1201 Hi-Lift Shov-Drag, 1950.
Lorain Model 80 Diesel Shovel 1¾ yd. cap.
Buc-Erie 44-B 2 yd. Diesel Shovel.
Lima 603, 1½ yd. Shovel-Crane-Drag. Diesel.
Lima 802, Shovel-Crane-Drag. 2 yd. Diesel.
Northwest Mod 60, 2½ yd. Shovel. Diesel.

CONCRETE PLANTS—BINS & SILOS

B-K 300 ton 3 compt. aggre. 250 bbl. cement 2 yd. weighbatcher. Complete.
New Steel 105 ton 3 compt. aggre. bin. Scales.
B-K 110 bbl. bulk cement bin Richardson scales.
Johnson 4-compt. agg. 2 Cement. 4 yd. batcher with 888 bbl. bulk cement silo.
Ready-Mix new 1950 4 compt. 3 for 200 tons aggregate 1-300 bbl. cement with 56-S Mixer.

ASPHALT PLANTS

Model M-20 Bituminous Monotrol Plant.
Cedar Rapids Travel Mix Plant 100-150 tons.
B-G Model 648 "Travel Plant".
B-G 842 Port. Utility Plant. Complete.
Littleford 1000 gal. Distributor on Int. Truck.

STIFF LEG AND GUY DERRICKS

Steel 35' stiff leg derrick 100' boom.
American 20 ton stiff leg derrick 90' boom.
Stiff leg derrick 15 ton 100 ft. boom.
American 20 ton Guy derrick 100 ft. boom.
Stiff Leg derrick 15 ton 65 ft. boom.

CONCRETE MIXERS AND PAVERS

Koehring 34-E Twin Batcher Paver.
2 Ransome 34-E Dual Drum Pavers Diesel.
2 yd. 56-S Smith Model T Tilting Mixer.
Rex 28-S Builders Mixer. Elec. New 1947.
Complete "Mixermobile" plant, all equipment.
28-S Ransome Builders Mixer. Elec.
Koehring 56-S stationary Mixer. New '50.

RICHARD P. WALSH CO.
30 Church St. New York 7, N. Y.
Cable RICHWALSH COrtlandt 7-0723-4

Scoopmobiles & Buggymobiles

NEW & USED
For Sale or Rent

HODGE & HAMMOND, INC.
720 Garrison Ave. New York 59, N. Y.
Phone: Kilpatrick 2-2400

SALE OR RENT

1—Owen Grapple size 86 Type RA.
1—Lorain 41 Cont. S & D 1948.
1—¾ Northwest 25 Gas as Bhoe.
1—MC 3 Lorain Truck Crane.
1—20 Ton Bay City Truck Crane 1948.
1—8 to 12 Ton Huber Tandem Roller.
1—6 Ton Huber 3W Diesel Roller.
1—45' Crane Boom for Link Belt LS90.
1—35 Ton Plymouth Gas Loco. 1943.
1—40 Ton Industrial Oil Fired Loco Crane 1943.
1—65 Ton 0-8-0 Saddle Tank Loco 1943.
2—Super C Tournapulls.

B. M. WEISS CO.
Girard Trust Co. Bldg. Phila. 2, Pa.
Rittenhouse 6-2311

FOR SALE

Double Drum Skagit Gaso. Hoist, Model BU-140
Capacity 49000# @ 57 F.P.M.
233000# @ 12 F.P.M.

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.
Phone Highlands 5-6700

VULCAN

PILE HAMMERS AND EXTRACTORS
NEW OR FACTORY REBUILT
FOR SALE • • • FOR RENT
327 N. BELL AVE., CHICAGO, ILL.

FOR SALE

1¼ Yd. Lorain
2 Yd. Northwest #8
3½ Yd. Lima 1201
3 Yd. Monoqahan
35 Ton Whirley Electric
10 Ton Krane Kar
35 Ton Stiff Leg Derrick
Lorain MC414 Truck Crane

3000# Asphalt Plant Portable
3 Drum Steam Hoist 10½ x 14
Chests
10 to 50 ton Gantry Cranes
10 to 60 ton Locomotive Cranes
15 ton Truck Crane #3 Northwest
Locomotives & Cars
25 Yd. LeTourneau Scrapers

5 to 32 Yd. Wagons
Hammers Vulcan #2-3-3000 — McK.T. #4-5-6-7-98Z—E2 Extractor Pumprete Machine
Bins — 10 to 450 ton — 200 barrel to 750 Brl.
10" Hydraulic Dredge

STONE THE CRANE MAN
1132 Prudential Bldg., Buffalo 2, N. Y.

SURVEYING INSTRUMENTS
USED • REBUILT • SALE
RENT • REPAIRING

REPAIRS
All Makes
TRANSITS • LEVELS
Repaired, Rebuilt,
Rented, Bought, Sold.
All Work Guaranteed
Precision Circular Graduating
BRUNSON INSTRUMENT CO., Inc.
1405 Walnut St., Kansas City 6, Mo.
Manufacturers of survey instruments with the famous patented Brunson Ball Bearing Base.

LASTING BRUNSON ACCURACY

REBUILT REPAIR RENT SALE EXPERTS
ALL MAKES
BUFF
69 Day St., New York

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent
Headquarters for REPAIRS — any make — Factory Service. We will also *buy* your old instruments or *take* them in *trade*. A complete line of Engineering Instruments and Equipment for field or office. Write for catalog N.R. 1-5.
WARREN-KNIGHT CO.
Manufacturers of Sterling Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

SPECIALIZED REBUILDING
of surveying and engineering instruments
All makes and models expertly repaired in modern shop. All work guaranteed
USED REBUILT INSTRUMENTS
for sale or rent
ROY D. HICKERSON
8 N EDMONDSON AVE INDIANAPOLIS 19 IND

FROM STOCK
Brand New & Rebuilt
TRANSITS & LEVELS
Fully equipped modern shop—all makes and models repaired — all work guaranteed — instruments rented
Midwest Representative: W. & L. E. Gurley
NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

QUALITY REPAIRS
by the makers of the
WORLD'S QUALITY SURVEYING INSTRUMENTS
Since 1871
C. L. BERGER & SONS, INC.
37 Williams Street, Boston 19, Mass.

WANTED

WANTED
40 Ton Low-boy Trailer
For single axle Tractor, equipped with out riggers. State age, make, condition, and price. Must be of legal width for licensing in State of Pennsylvania.
KOFMAN'S
Bellefonte, Pa.—4739

WANTED
1 Electric Motor, 400 HP, 450 RPM, 3 Phase, 60 Cycle, 440 Volts, Slip-Ring.
IVAN M. MARTIN, INC.
Blue Bell, Pa.

WANTED
Page Automatic Type RH or RHD
DRAGLINE BUCKET
1½ or 2 cubic yard capacity for delivery in Michigan.
TULLER CONSTRUCTION CO.
P. O. Box 431 Red Bank, New Jersey

WANTED
Model E Browning Crane or Shovel
Condition Not Important
DANIEL KLOCKNER JR., INC.
164 Franklin Ave. Rockaway, N. J.
Tel: RO 9-2340

WANTED TO PURCHASE
10-TON ROLLERS
Tandem and 3-wheel. State what you have, condition, price, make, serial number and location.
W-9819, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED
1 YD. CLAM SHELL CATERPILLAR TYPE CRANE
With 50' boom, modern type, '48 or later, gas or diesel—any make.
EVEREADY CO.
803 Housatonic Ave. 4-9471 Bpt., Conn.

for
DIRECT CONTACT
with the
MOST ACTIVE BUYERS
throughout the field of
ENGINEERING
CONSTRUCTION—
Use the Searchlight Section
ENGINEERING NEWS-RECORD

SEARCHLIGHT SECTION

This index is published as a convenience to the readers. Every care is taken to make it accurate, but Searchlight Section assumes no responsibility for errors or omissions.

Aberthaw Co. 124, 125, 126, 127, 129
Air Compressor Rental Co. 124
Albert Pipe Supply Co., Inc. 131
Albright Foundation Corp. 129
Albro Steel Co. 126
All State Truck-Trailer 130
American Air Compressor Corp. 127
Amerlux Steel Products Corp. 129
Arrow Contractors Equipment Co. 130

Bendix Machinery Co., Inc. 129
Berger & Sons Inc., C. L. 128
Bixby, R. W. 120
Boyer, R. H. 125
Braun & Co., C. F. 121
Brunson Instrument Co., Inc. 128
Bucks County Construction Co. 126
Buff 128

Campanella & Cardi Construction Co. 129
Carpenter, Inc., R. F. 124
Clark Co., W. I. 129
Construction Survey Coop. 120, 122
Contractors Machinery Co. 127
Corbisello, R. N. 129
Cortright 131
Cowhey & Sons, J. 129

Darien Corp. 129
Davidson Pipe Co., Inc. 131
Day & Maddock Co. 124
Drachman Steel Corp., Hy. 127
Dresser Equipment Co. 122
Dyer Co., Inc., W. H. 130

Earle Equipment 126, 127
Engineered Agency 120
Ennis Supply Co. 126
Equipment Corp. of America 125
Eveready Supply Co., The 124, 128

Fabick Tractor Co., John 124
Ferguson Co., H. K. 121
Fleetwood Paving Corp. 126
Forsythe Equipment Co., Inc. 131
Foster Co., L. B. 129, 130
Frank, M. K. 130
Frantz Equipment Co. 124
Fruchbaum, Office of J. 120

Gannett, Fleming, Corddry & Carpenter, Inc. 122
General Equipment Co. 129
Greenpoint Iron & Pipe Co., Inc. 131
Greensburg Machine Co. 125
Grove City Construction Co. 126
Groves & Sons & Co., S. J. 124
Guion, H. P. 124

Harris Wrecking Co. 131
Hickerson, Roy D. 128
Hodge & Hammond, Inc. 127
Hower Company, J. S. 130
Hunter Tractor & Machinery Co. .124, 126

Johnson, M. L. 130

Klockner, Jr., Inc., Daniel 128
Koch Erecting Co., Karl 122
Kofman's 126, 128

Larsen Piling Corp. 129
Luria Brothers & Co., Inc. 130

MacNeal, Donald B. 126
Martin, Inc., Ivan M. 128
McCarrick Brothers 131
McKee & Co., Arthur G. 120
Mississippi Valley Equipment Co. 125, 129
Morrison Railway Supply Co. 130

National Blue Print Co. 128
Nesbitt Equipment Co. 129

O'Neill, A. J. 125

Quist Construction Co., Inc. 131

Rental Service Co. 124
Reynolds, J. R. 129
Rupp Equipment Co. 130

Schoonmaker Co., Inc., A. G. 127
Shanahan, Inc., John J. 130
Smith Inc., L. B. 123
Steel Structures Inc. 122
Stone the Crane Man 127
Susquehanna Paving Materials Co. 129

Tractor & Equipment Co. 125
Tuller Construction Co., The .126, 128, 130

V. C. L. 126
Vulcan Iron Works 127

Walsh Co., Richard P. 127
Warren-Knight Co. 128
Weiss Co., B. M. 127
Wellworth Trading Co. 126
Williams Co., The W. W. 130
Wilson Engineering Corp. 122
Winston Bros. Co. 130
Wyman, Inc., W. W. 131

Truck Crane: 1931 Universal Crane with New Waukesha Engine mounted upon a 1927 Mack Truck. Crane equipped with a 50 foot sectional boom; 8 wheels in rear; 2 wheels in front; all with pneumatic tires. Gross Weight—35,000 lbs.

Pump: 100 H.P.; Allis Chalmers A.C. Motor with 6" Suction and discharge. Mfgd. by Alberger Pump & Condenser Co. Capacity 750 gallons per min.

Pumps: Various Sizes of Horizontal Duplex Pumps manufactured by Worthington, Warren and Dean.

J. COWHEY & SONS
440 Van Brunt Street, Brooklyn 31, N. Y.
MAin 5-5587

FOR SALE

BUCYRUS ERIE 37-B RECONDITIONED SHOVEL with 60' CLAMSHELL BOOM

BUCYRUS ERIE 34-B STANDARD SHOVEL with 60' CLAMSHELL BOOM

4 BLAW KNOX LATE TYPE FINISHING MACHINES and SPREADERS.

THE W. I. CLARK CO.
P. O. Box 301 New Haven 2, Conn.

EXCESS EQUIPMENT
FOR SALE

2 Model HF Hough Payloaders, ¾ c.y.
1 Model T6K Michigan Truck mtd. ½ c.y. Backhoe.
1 Leroi Tractair 105 cfm Compressor, equipped with Leroi wagon drill.
1 Worthington 105 cfm Compressor, 4 pneu. tires.
1 Worthington 315 cfm Compressor, 4 pneu. tires.
1 300 amp. electric Hobart shop welder.
1 Rex. 1½" Water Pump
1 Gardner Denver 2" air powered water suction pump.
1 Gorman Rupp 2" water pump.
1 Giant Pipe Pusher.
1 Mueller Pipe Tapping Machine.

All equipment practically new and in excellent condition.

Susquehanna Paving Materials Co.
137 So. Second St. Sunbury, Penna.

FOR SALE

1 Barber Greene Finishing Machine.
1 Galion 10 ton 3 wheel Roller, 24" Rear Roll.
1 Galion 303 Motor Grader.
1 800 Gal. Water Tank & Pump, Truck Mounted, Graybar.
1 LiNefort Traction Driven Road Broom.

All of above equipment practically new. No piece used over 60 working days. Perfect condition. Write

J. R. REYNOLDS ASPHALT PAVING CO.
Canadensis, Pa. Tel.—Cresco, Pa. 5251

LORAIN 820 Diesel 2 cy Shovel, built 1948
P. & H. 150 Ton Wheel 6X6 Truck Crane
CAT'R D-7 bulldozer 4T series, also w/scraper
INT'L. TD-18 cable & hydraulic bulldozers
INT'L. TD-14 hydraulic bulldozer
ALLIS-CHLS. HD-5 shovel dozer
New AMSCO 1-¾ cy Dipper for Lorain 80
Critical CAT'L. & INT'L. tractor parts

BENDIX MACHINERY CO., INC.
401 Broadway, New York 13 Canal 6-5693

PILING

PUMPCRETE For Sale

160 Double—1200 Ft. Pipe—Large Stock Fittings & Spare Parts

NESBITT EQUIPMENT COMPANY
451 Calvert St. Alexandria, Virginia

! ! ! NOTICE ! ! !

For good used construction machinery, save time. Use our experience.

Mail your inquiry now, large or small. NO OBLIGATION.

GENERAL EQUIPMENT CO.
133-18 227 St. Laurelton, L. I., N. Y.

FOR SALE
New Wire Rope Blocks

18" Single 20 Ton with S. Shackle.... $25.00
18" 3-Sheave 30 Ton with Shackle.... 50.00
18" 4-Sheave 30 Ton with Shackle.... 75.00
#32 Drop Forge Hooks, New..... 2.00

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.

FOR SALE
Cedar Rapids 4024 Roll Crusher

Powered by #650 Murphy Diesel Engine with 30 KW Generator. Used only four months.

N. R. CORBISELLO
Box #45 Binghamton, N. Y.

FOR SALE

1—Model S112 Bucyrus Scraper Ser. #26444 Excellent Condition—$4,500.

Campanella & Cardi Const. Co.
780 Jefferson Blvd. Hillsgrove, R. I.

BARGE CRANE

30-ton revolver on 112' steel barge. 120' boom. Buda diesel power. Unused Surplus.

FS-9683, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

STEEL
SHEET PILING

will roll to size and specifications

AMERLUX
STEEL PRODUCTS CORP.
100 PARK AVENUE
NEW YORK 17, N. Y.
DIRECT MILL OFFICE OF THE
ARBED
STEEL MILLS IN LUXEMBOURG

STEEL SHEET PILING

Available from N. Y. stock
Will also roll to size and specifications

LARSSEN PILING CORP.
21 West St., New York 6, N. Y.
Phone: HA 2-2280

FOR SALE
NEW STEEL SHEET PILING

65 pcs 20 ft Beth SP4
10 pcs 16 ft Beth SP4
Located New Jersey

ALBRIGHT FOUNDATION CORP.
207 E. 32nd St. New York 16, N. Y.

We do a "Nation-Wide" Business in

STEEL SHEET PILING

IMMEDIATE SHIPMENT

139 pcs. 60 ft Carn M115-Illinois
425 pcs. 60-30 ft Inland 127-Chicago
400 pcs. 50&45 ft "Z" sections-Florida
346 pcs. 45&40 ft Beth DP2-New York
103 pcs. 20-19 ft Inland 122-Tennessee

Other lengths & sections used & new at other locations in United States for rent.

We have Nation-wide reputation for effecting QUICKEST SHIPMENTS

All sizes Vulcan & McKiernan Pile Hammers & Extractors for rent—Shop Rebuilt

Regardless of location of job, Wire, Write or Phone

MISSISSIPPI VALLEY EQUIPMENT CO.
511 Locust St. St. Louis, Mo.
Chestnut 4474

STEEL SHEET **PILING**
LARGEST *RENTAL STOCKS* IN U.S.

The exact lengths and sections of Steel Sheet Piling to meet all needs—shipped *"FASTER From FOSTER."* RENT- Corrugated Steel Piling, Pile Hammers & Extractors.

• RAILS • PIPE • WIRE ROPE

L.B. FOSTER CO.
Pittsburgh 30, Pa. New York 7, N. Y.
Chicago 4, Illinois Houston 2, Texas

STEEL SHEET PILING

700 pcs Beth DP2—45, 40, 30 & 25 ft.
200 Tons Beth ZP38—26 to 30 ft.
2200 Ton Z-27 and 32-40 ft.
41B & MARION 32 STEAM CRANES
85 McKiernan Terry Hammer

DARIEN, 60 E. 42nd St., N. Y., N. Y.

FOR SALE

TWO (2) "Fairbanks-Morse" Used Diesel driven Generating Plants, consisting of:

FM type VA Diesel engines
257 RPM—180 HP
with
150 KVA—257 RPM, 3 Ph.
60 cycle, 480 volt Alternators
and
FM—7½ AMP, 257 RPM
Excitors

GOOD CONDITION
READY FOR WORK

ARROW CONTRACTORS EQUIPMENT CO.
2020 Walnut Street
Chicago 12, Illinois
SEeley 3-2040

THREE BARGAINS

All A-1 Condition

1 YD. 1942 LS-85 LB-BLT SHOVEL OR CRANE W. D-8800 CAT. ENG.

¾ YD. 1948 33-M MARION W. GMC DIESEL AND ANY FRONT END DESIRED

W/C BL-KX. 10/15' N. NEW CONC. FIN. MACHINE

J. S. HOWER CO.
Utica ph: 25218—26857—64110

For Sale

2—TD 18's W Hydraulic Bulldozers (like new)
1—TD 18 W Cable Bull DDPCU (like new)
2—TD 9 W Hydraulic Bulldozers (like new)
1—Model 40 Loraine Truck Crane Mack chassis
30—T-5-RBU Gar Wood Tractor rear mount winches (new)
1—10 Ton Gar Wood Telescopic Boom Crane on Mack diesel flat truck body.
1—1¼ yd. Perforated Drag Bucket (perfect)
6—T-4B Tractor Front end winches.

JOHN J. SHANAHAN, INC.
17 Electric Ave. Brighton 35, Mass.
Cable SHANCORP. ALgonquin 4-6705

FOR SALE
LIMA 1201 Combination Crane & Shovel
3 CY Bucket
NORTHWEST 80-D Shovel 2 CY Bucket
WINSTON BROS. COMPANY
Whitney, Texas
P. O. Box 1000 Phone 179

GOOD BUYS IN USED EQUIPMENT

3—EUCLID Bottom Dump Haulers, 13 cu. yd. cap., Cummins 150 H.P. Diesel engines. Excellent condition. Guaranteed.
1—International UD-9 Power Unit, completely rebuilt. Guaranteed.
1—Jaeger 11-S size concrete mixer, Continental gas engine, on two 7.50 x 16 tires. A good buy.

DON'T WAIT.
Write, Wire or Call

THE W. W. WILLIAMS CO.
835 W. Goodale Blvd. Columbus 8, Ohio
MAin 6751, L.D. 1

SACRIFICING MACK TRUCKS SURPLUS CHASSIS

Mack's 10 Wheeler's—6x6, 707 thermodyne engine, double driving rear's (Timken 353) 1000x22 tires, bud wheels, all open top cabs

Suitable for
Truck Tractor's, Concrete Mixers, Dumpers, Crane and Shovel Mountings.

ALL STATE TRUCK & TRAILER
58th Street, Corner Queens Blvd.
Woodside, L. I., N. Y. Phone—IIl. 8-7430

IF THERE IS

Anything you want

that other readers of this paper can supply

OR—

Something you don't want

that other readers can use, advertise it in the

SEARCHLIGHT SECTION

FOR SALE

CONCRETE BATCH and MIXING PLANT

Plant includes: One 2 cu. yd. Smith tilting mixer, together with concentric aggregate and cement batcher and bins arranged for four aggregates and cement. Has scale equipment and air-entraining admixture batcher; also, steel cement silo with bucket elevator and undertrack screw conveyor.

Located in Northern Michigan. Available about July 1, 1951. Purchased new and has been used to mix only about 40,000 cu. yds. of concrete.

THE TULLER CONSTRUCTION CO.
RED BANK, NEW JERSEY

AMERICAN R15 GANTRY TRUCK

1 Set 4 Trucks—10 h.p. Slipring Motor—440 volt 60 cycle 3 phase, with brakes. Ideal for standby conversion, etc.

LURIA BROTHERS & CO. INC.
Lincoln Liberty Bldg. Phila. 7, Pa.
Rittenhouse 6-7455

RAILS—TIES
TRACK ACCESSORIES

FOR SALE
1—Caterpillar D8 Tractor S/N 8R9007. Equipped W/LeTourneau P.C.U. Tractor over-hauled and painted.
1—LeTourneau LP Scraper S/N S-26328 LPF.
1—Caterpillar D8 Tractor S/N 1H8782. Equipped w/LeTourneau P.C.U. Tractor over-hauled and painted.
1—LeTourneau LP Scraper S/N S-8201 LPD.

Write or Call

M. L. JOHNSON
112-32nd St. Dr. S.E.
Cedar Rapids, Iowa

NEW AND RELAYING **RAILS**
"FASTER From FOSTER"

Largest stocks in U.S.—New and Relaying Rails, Track Tools and Accessories. All your trackage needs — new installations or replacements filled *"FASTER from FOSTER." All material backed by Foster Guarantee.* Write for Catalog.

• STEEL SHEET PILING • PIPE

L.B. FOSTER co
Pittsburgh 30, Pa. New York 7, N. Y.
Chicago 4, Illinois Houston 2, Texas

EVERYTHING FOR THE TRACK FROM
SWITCH TO BUMPER

NEW & RELAY RAILS
IN STOCK
12± THRU 130± SECTIONS
ACCESSORIES & SWITCH MATERIALS
Inquiries Serviced Promptly

MORRISON RAILWAY SUPPLY CORP.
RAND BLDG. BUFFALO 3, N. Y.
EMPIRE BLDG. BIRMINGHAM 3, ALA.

SUPER C's

4 With W210 Wagons
5 With TLP Scrapers
LATE MODELS LOW HOURS
RUPP EQUIPMENT CO., Buffalo 16, N. Y.

NEW—RAILS—Relayers

All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

M. K. FRANK
480 Lexington Ave. Park Bldg.
New York, N. Y. Pittsburgh, Pa.
Reno, Nevada Carnegie, Pa.

New **RAILS** Relay
Tie Plates - Spikes - Frogs & Switches, Etc.
W. H. DYER CO., INC.
1859-X Railway Exchange Bldg., St. Louis, Mo.
Stocks at Various Points — Quick Service

PIPE

EST. 1904

DAVIDSON

PIPE COMPANY INC.

FORMERLY

ALBERT & DAVIDSON PIPE CORP.

ONE OF THE LARGEST STOCKS IN THE EAST

Seamless and Welded ⅛" to 26" O.D.
All wall thickness Manufactured.
Specialty large sizes.
Cutting — Threading — Flanging — Fittings — Valves.

Call GEdney 9-6300

50th St. & 2nd Ave., B'klyn 32, N. Y.

PIPE

VALVES and FITTINGS
All Sizes in Stock
NEW—USED

GREENPOINT IRON & PIPE CO., INC.
Bogart and Stagg Streets Brooklyn, N.Y.

PIPE AND ACCESSORIES

IF IT'S MADE, WE HAVE IT!

Seamless and Welded—Every Size and Wall Thickness—Cast and Wrought Iron, Steel, Alloys

POWER PIPE FABRICATING

Bending, Coiling, Flanging, Threading, Beveling, Lining, etc.

Valves & Fittings
Piling & Fittings
Culverts

SPEED-LAY PIPE SYSTEMS
Write for brochure

ALBERT
PIPE SUPPLY CO., INC.
Berry at North 13th St.
Brooklyn 11, N. Y.
Phone EVergreen 7-8100

FOR RENT

For Rent

SPEEDCRANES

LATE MODELS

Manitowoc Diesel Powered Speedcranes for rent. 25, 40 and 60 ton capacities with booms 100' or more, 20' and 30' jibs. Special price on long rentals.

FORSYTHE EQUIPMENT CO., INC.
37-11 Vernon Blvd. Long Island City, New York
Tel. STillwell 4-1030

FOR RENT

MANITOWOC SPEEDCRANES

Late model combination shovels, cranes & draglines. 1¼ to 2½ cu. yd. capacities, 25 to 60 ton lifting capacities, 60 to 80 ft. booms, Diesel powered, complete with light-plants.

Special rates on long-term rentals

McCARRICK BROS.

1700 E. Ridge Pike Norristown, Pa.
Box 297 *Tel. Norristown 4231*

1—50B Bucyrus Erie Crawler Crane, 79 ft. Boom, 90 Ft. Leads for Pile Driving with Vulcan # 1 or S-5 hammers.
1—Floating Pile Driver, 65' leads. Excellent Condition.
1—Floating Derrick 85' Boom. Excellent Condition, fully equipped for heavy construction.

QUIST CONSTRUCTION CO., INC.
8410 Third Ave., Brooklyn 9, N. Y.

ELECTRIC CABLE *for Sale*

1 Reel—1025 feet Coronol Geoprene Mine Power Cable 2-0—AWG—5000 V.—3 Conductor. New—never used.
1000 feet—Portable Cable—Amerclad—Type SHD ☐2—3 Conductor—133 Strand —5000 V. NEW.
1000 feet—Portable Cable—Same as above —slightly used—has 6 splices—all in good condition.
7000 feet—Shielded Preassembled Aerial Cable—5 KV—2-0—3 Conductor w/copper shielded tape—Used but in good condition.

FS-9732, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

FOR SALE

1 Owen ¾ C. Y. Clamshell Bucket
2 Blaw Knox 1 C. Y. Concrete Buckets
1 Rex 1 C. Y. Paving Concrete Mixer
1 Butler three compartment Batch Bin, 66 C. Y. or 100 ton capacity, with batching scales.

W. W. WYMAN, INC.
324 Wells St., Greenfield, Mass.

For Sale

Link Belt Dragline—2½ yard
Model K595—85 ft. boom
Excellent condition.

FS-9835, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

STEEL TIE RODS

7000 Ft., 1-⅝" diameter 32' long. Excellent condition. $90.00 Net Ton.
1000 Ft., 8" Steel Pipe.

FIR TIMBER

72 Pcs. 12" x 12" x 16'.
72 Pcs. 8" x 8" x 12'.

All Material in Norfolk, Va.

HARRIS WRECKING COMPANY
1898 West 3rd St., Cleveland, Ohio. Cherry 1-1907

GASOLINE DRIVEN HOIST

75 HP, 2G, 2 drum American, 1 cu. yd. bucket, one 40 cu. ft. extended hoppers, gate type, two 16" top sheaves, Babbitt boxes, one 16" bottom sheave, 800 feet cable; equipment in Roanoke, Va.

Inquire: W. CORTRIGHT
163-18 Jamaica Ave. (Rm 610), Jamaica, N. Y.
Tel JAmaica 3-3710

PROFESSIONAL SERVICES

Duval Engineering & Contracting Co.

General Contractors

FOUNDATION BORINGS
For Engineers and Architects.

Jacksonville, Florida

Consoer, Townsend & Associates

Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.
351 East Ohio St., Chicago 11, Illinois

Soil Testing Services, Inc.

Theo. W. Van Zelst Carl A. Metz
John P. Gnaedinger

Soil Borings Rock Coring
Engineering Testing of Soils
Soil & Foundation Reports
4520 W. North Ave. Chicago 39

Metcalf & Eddy

ENGINEERS

Investigations Reports Design
Supervision of Construction
and Operation
Management Valuation Laboratory
Statler Building 111 Sutter St.
Boston 16 San Francisco 4

Long Island Dredging Co.

Consulting Engineers

Investigations — Reports — Plans — Specifications — Estimates — Supervision

DREDGING OPERATIONS
171-18 Liberty Ave. Jamaica 5, N. Y.

Severud-Elstad-Krueger

Consulting Engineers

Structural Design - Supervision
Reports Buildings - Airports
Special Structures
415 Lexington Avenue
New York 17, N. Y.

Gannett Fleming Corddry & Carpenter, Inc.

ENGINEERS

Water Works, Sewage, Industrial Wastes & Garbage Disposal — Roads, Airports, Bridges & Flood Control, City Planning, Traffic & Parking, Appraisals, Investigations & Reports.

Harrisburg, Pa.

Branch Offices
Scranton, Pa. Pittsburgh, Pa.
Medellin, Colombia, S. A.
Daytona Beach, Fla.
Havana, Cuba

Albright & Friel, Inc.

Consulting Engineers

Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators, Power Plants, Industrial Buildings, City Planning, Reports, Valuations, Laboratory.
121 So. Broad St., Philadelphia 7, Pa.

Frederick H. Dechant

Consulting Engineer

Chairman of the Board,
Frederic R. Harris Inc.
Water Works, Industrial Wastes, Sewerage, Recovery Processes, Hydraulic Works, Gas Plants
Phila.: Fidelity Phila. Trust Bldg.
New York: 27 William St.

Lawrence A. Leary & Co.

Consulting Engineers

Brickwork & Masonary Constr. Problems
Surveys • Quantity • Safety & Inspection
Mortar Specifications
Box 269, Wayne, Penna.

Inspecting and Testing

Johnson Soils Laboratory

Engineering design and construction tests run for MOBILE LABORATORY UNITS at construction site. Field load bearing tests.

4595 Palisades Ave., New York 63, N. Y.
KIngsbridge 3-5727

REMEMBER ! !

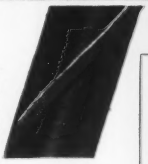
You can depend on these consultants for a fast, accurate solution to your problems. Consult them when necessary.

This Plant *"bottles-up"* Corrosion in COLD WATER LINES with BYERS WROUGHT IRON PIPE

COCA-COLA BOTTLING CO.
WHEELING, WEST VIRGINIA
Coca-Cola Bottling Company — Architect and Engineer
F. H. Newman and Company — Fabricator and Plumber
Coca-Cola

Combining the pleasing architectural treatment and the sound mechanical design that invariably trade-marks these structures, this newest Coca-Cola Bottling Company plant utilizes genuine wrought iron pipe in all cold water lines to minimize maintenance and assure a constant supply of clear, uncontaminated water. Byers Wrought Iron pipe, in 3, 4, and 6-inch sizes, was used. This is the 30th Coca-Cola Bottling plant in which genuine wrought iron has been used to combat corrosion.

Byers Wrought Iron pipe has a proven record of long, dependable life in services where corrosive attack is a threat to durability. The most impressive histories are provided by old buildings where many original genuine wrought iron plumbing and heating lines are still serving after periods ranging up to half a century.



When pipe specifications are written, careful thought should be given to the consequences of failure. The expense of installing is material plus the pipe fitter's labor. The cost of repairing is material cost plus the labor of the pipe fitter, mason, plasterer, carpenter, painter—as many as five crafts. The wisdom and economy of using a durable pipe is self-evident. And Byers Wrought Iron pipe answers the need.

Our booklet, "THE ABC's OF WROUGHT IRON," tells how genuine wrought iron is made, where it is successfully serving, why it lasts longer. Ask for a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N. Y.

Why Genuine Wrought Iron Lasts

This notch-fracture test specimen illustrates the unusual fibrous structure of genuine wrought iron—which is responsible for the unusual corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

BYERS

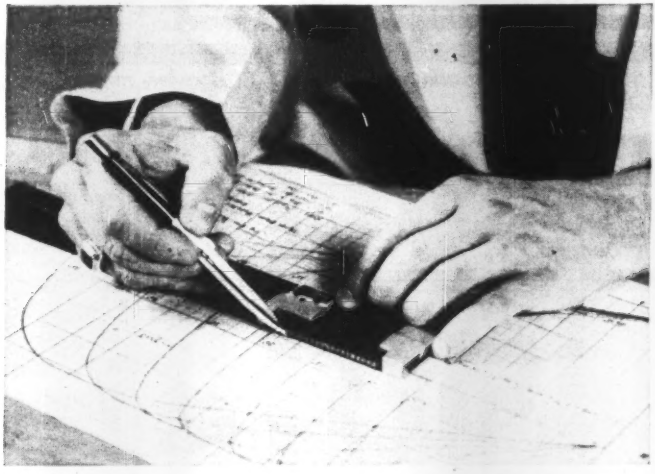
CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

NEW PRODUCTS



Variable-scale rule solves problems quickly

The Gerber variable scale is said to answer the engineer's wish for a "rubber ruler". It features a triangular spring that helps solve many technical and non-technical problems involving spacing, scaling, proportions, graphical-algebraic calculations, odd scales, plotting, and conversion of scales on graphs. For convenience in reading, every 10th coil of the 100-coil spring is red, and half-way coils in between are green. In any position of the spring, the number of coils per inch will equal the total number of coils divided by the length of the spring in inches. If, for example, the hairline is set at 4 on the scale, the number of coils per inch is 100/4, or 25. The scale also includes a reciprocal scale so that the number of coils per inch can be set directly.

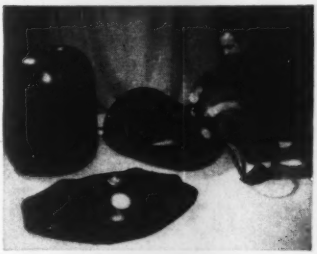
Developed by H. J. Gerber, while a student at Rensselaer Polytechnic Institute, the school reports numerous uses for the scale in design work. Among these are: Interpolating contours between spot elevations on topographic maps; determining distances on aerial photographs that have not come out to an even standard scale; in scaling dimensions in drawings for buildings and other construction; for working out estimates for materials needed in any one section or job; for relating graphs that have been drawn to varying scales; and in spacing rivets to true proportions.—The Gerber Scientific Instrument Co., 89 Spruce St., Hartford 1, Conn.

Dry duplicates in 60 sec.

Xerography duplicating method provides copies of drawings, letters, charts, or reports in less than 1 min. It is a dry, direct-positive electrostatic reproduction process that requires no water, chemical, film, or sensitized materials. The complete XeroX outfit of three units fits on a 3x5-ft table. Each unit plugs into a standard ac outlet. In Xerography, there is no need for darkroom or special plumbing.—The Haloid Co., Haloid St., Rochester 3, N. Y.

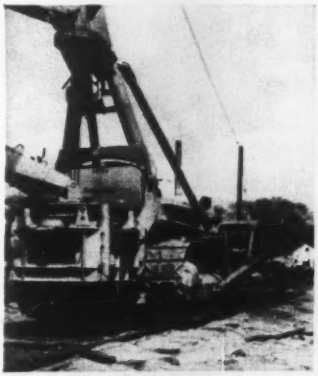
Improved glass bocks

Clean-Easy face finish on PC 55 line functional glass blocks cuts in half time required to clean away mortar smears during panel construction. Also, rainfall is said to help clean the panel exterior, preventing clinging dirt from reducing light transmittal. Other features of the 55 include: Finger-feel ridges located on the top inside ends and the color-keyed orientation guides to insure proper placement of the blocks; and color and name designation in different colors to prevent mixing of various types of blocks in a panel. —Pittsburgh Corning Corp., 307 Fourth Ave., Pittsburgh 22, Pa.



Collapsible storage drum

Synthetic rubber-and-fabric drum is returnable and reusable. It can be collapsed after emptying and is suitable for shipment of oils, greases, paints, soaps, dry powders, and a variety of chemicals. The drums are made of Ustex cord fabric, impregnated with synthetic rubber and molded in one piece. They are equipped with fittings for filling, emptying, lifting, and handling. When full, it retains its shape without appreciable distortion. An empty 55-gal drum weighs less than 30 lb.—United States Rubber Co., 1230 Sixth Ave., New York 20, N. Y.



Special track-walking shoes

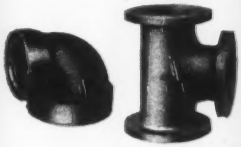
Esco shoes for crawler tractors have flanges corresponding to flange on railroad-car wheels. They enable the tractor to run on standard-gage railroad tracks for track laying, roadbed

(Continued on page 135)

EVERYTHING FOR PIPING

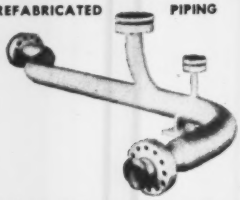
PIPE HANGERS and SUPPORTS

CAST IRON FITTINGS

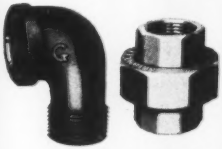


WELDING FITTINGS

PREFABRICATED PIPING

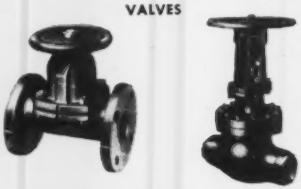


MALLEABLE IRON FITTINGS



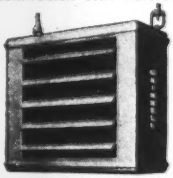
FORGED STEEL FLANGES

VALVES

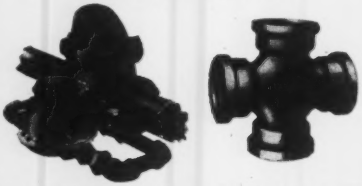


STEEL NIPPLES

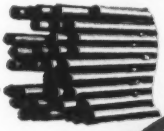
THERMOLIER UNIT HEATERS



WATER WORKS SPECIALTIES



PIPE



PLUMBING and HEATING SUPPLIES

Whatever your requirements for pipe, fittings, valves and other standard piping materials, you can get prompt delivery from a Grinnell warehouse or jobber. When the job calls for specialized piping products or installations, Grinnell has the manufacturing facilities, products, experience and engineering knowledge to "deliver the goods".

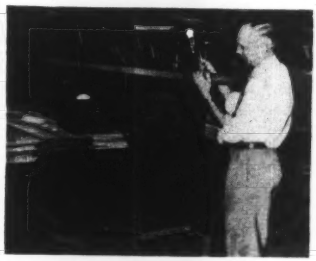
at your nearby GRINNELL Warehouse or Jobber

GRINNELL

WHENEVER PIPING IS INVOLVED

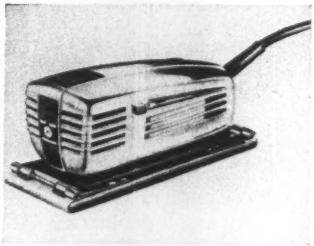
GRINNELL COMPANY, INC., Providence, R. I. Warehouses: Atlanta • Billings • Buffalo • Charlotte • Chicago Cleveland • Cranston • Fresno • Kansas City • Houston • Long Beach • Los Angeles • Milwaukee • Minneapolis • New York Oakland • Philadelphia • Pocatello • Sacramento • St. Louis • St. Paul • San Francisco • Seattle • Spokane

grading, car spotting, loading, or unloading. The tractor can mount or dismount without injury to the rails. Off the rails, the Esco shoes do not affect normal tractor performance.—Electric Steel Foundry Co., 21241 N. W. 25th Ave., Portland 10, Ore.



Moisture-measuring meter

All-purpose meter measures moisture content of wood, plaster, and similar materials. The Model 8008 has a larger span than previous models, and a larger scale for greater ease in reading. It has an over-all range of 2,000 ohms to 20,000 meg-ohms. The instrument can be used with any material capable of accommodating electrode probes.—Weston Electrical Instrument Corp., Tagliabue Instruments Div., 614 Frelinghuysen Ave., Newark 5, N. J.



Finishing sander

Guild Model 105 sander is a motor-driven unit featuring two counterbalanced transmissions. Abrasive pad revolves in a $\frac{3}{16}$-in.-dia orbit at 5,000 rpm. This produces an overlapping action especially recommended for wallboard joints, or wherever cross grains meet. The sander is 9 in. long, 3 in. wide, $3\frac{3}{4}$-in. high, and weighs 5 lb. —Porter-Cable Machine Co., 7022A N. Salina St., Syracuse 8, N. Y.

Portable dehumidifier

Humidry unit is capable of removing 18 pints of water in 24 hr under conditions of 80 deg F and 70% humidity. This $\frac{1}{4}$-hp unit features a vertical arrangement of spiral-finned evaporator coils. Condensed moisture is disposed by attaching rubber tubing to the drip-pan spout. A removable condensate pail is provided with the unit. The Humidry weighs 60 lb and measures $23\frac{1}{2}$x$17\frac{1}{2}$x$13\frac{1}{2}$ in.—Carrier Corp., Syracuse, N. Y.

Non-sieze thread compound

Metallic compound combines advantages of a lubricant and sealer to prevent seizure of pipe, bolt, and stud threads and gasket faces. Led-Plate is said to be effective in a temperature range from minus 350 F to plus 2,900 F. The compound can be used for steam, gas, water, air, oil, ammonia, and various chemical connections.—Armite Laboratories, 6622 Broad St., Los Angeles 1, Calif.

Switch-maintenance jack

Single-acting track jack is designed to simplify maintenance work on switches and spurs, and temporary tracks used on construction projects. It has a low minimum toe height of $1\frac{1}{2}$ in. This permits placing jack under rails without removing ballast. The $2\frac{1}{2}$x$3\frac{1}{4}$-in. forged toe stabilizes the load. Trip can be operated from either right or left side, with the operator protected by an improved safety thumb guard. Over-all height of the 16A is 12 in.; lift is 6 in.; weight is 45 lb; and capacity is 15 tons.—Templeton, Kenly & Co., 1002 S. Central Ave., Chicago 44, Ill.

Pneumatic cylinders

B-50 series of pneumatic cylinders is designed for throttling control service with chemical feeders, drive units, and similar operations. They consist essentially of an 0-ring sealed pneumatic cylinder with a piston positioner integrally mounted in the head plate. The B-50 series is suitable for use with air-supply pressures up to 100 psi gage, and are capable of repositioning accuracies to 1/500th part of the total

(Continued on next page)

"I GO with the GREEN"

Yes, I'm a Construction Engineer...

I build *wooden bridges* — and for longer life, trouble-free service, I always build with decay-and-termite resistant...

BAXCO

CHEMONITE

PRESSURE TREATED LUMBER

TERMITE & DECAY RESISTANT

- CHEMONITE was developed by University of California Scientists.
- CHEMONITE has been proven by over 20 years of use.
- CHEMONITE resists termites and wood-decaying fungi.
- CHEMONITE is non-leaching, clean, odorless and paintable.
- CHEMONITE gives permanent protection to all wood products.
- Approvals: Federal and State specifications; American Association of Highway Officials; Los Angeles City Building Code.

Yes GO with the GREEN trustworthy as it's color!

FREE brochure gives you the facts!

Write for FREE brochure! Learn why leading specifiers turn to Chemonite for better, lower cost wood protection!

J. H. Baxter & Co.
200 Bush St., San Francisco 4, Calif.
601 W. Fifth St., Los Angeles 17, Calif.

Baxco Corporation
541 Pittock Block, Portland 5, Ore.

J. H. Baxter & Co. of Ore.
P. O. Box 752, Eugene, Ore.

PRESSURE TREATED BAXCO TIMBER-POLES-TIES-LUMBER CHEMONITE

Have you seen the important NEW FEATURES on the WHITE Engineers' transit

YES, the White Engineers' Transit is a fine engineer's instrument — now made even finer with the addition of *covered leveling screws* and *coated optics*.

Covered leveling screws assure you of smooth, easy, precise leveling at all times, under all kinds of conditions for the life of the instrument itself.

Coated optics guarantee clear, sharp, accurate images — without halation, at longer distances, even under adverse conditions.

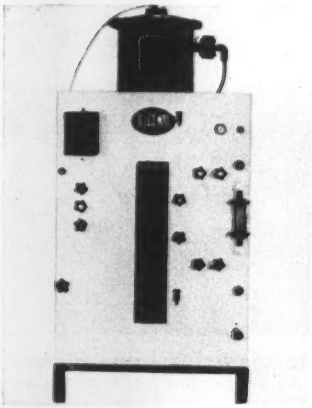
Compare the David White Engineers' Transit with all others—feature for feature — price for price. Compare them for accuracy — long durability — built-in quality. To meet your preference, this instrument is available with "U" or "A" type standards. You'll find you'll buy right when you buy a David White.

Contact our nearest dealer for complete details of the David White Engineers' Transit and for other fine Engineering Instruments—or write direct to David White, 315 W. Court St., Milwaukee, Wis.

DAVID WHITE COMPANY

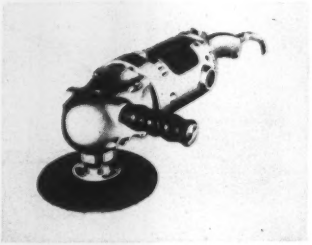
We offer complete, prompt repair service on all makes of instruments — levels, transits, theodolites, etc.

travel. Available in 4, 6, and 8-in. bores, strokes to 4 in.—CONOFLOW CORP., 2100 ARCH ST., PHILADELPHIA 3, PA.



Water purifier

Mixed-bed de-ionizing equipment produces a water containing less than 0.1 ppm of dissolved solids and reduces silica content to less than 0.02 ppm. The illustration shows a packaged mixed-bed unit, one of a series available in sizes ranging from 12 to 1,000 gph.—ILLINOIS WATER TREATMENT CO., ROCKFORD, ILL.



Portable disk sander

Heavy-duty sander (Model 460) has a 7-in. backing pad, is 18-in. long, and weighs 14 lb. The Model 465 standard-duty unit has a 9-in. backing pad, is 18-in. long, and weighs 14¾ lb. Both are powered by a ½-hp universal motor and have a non-load speed of 4,200 rpm. — CUMMINS-CHICAGO CORP., CUMMINS PORTABLE TOOLS DIV., 4740 N. RAVENSWOOD AVE., CHICAGO 40, ILL.

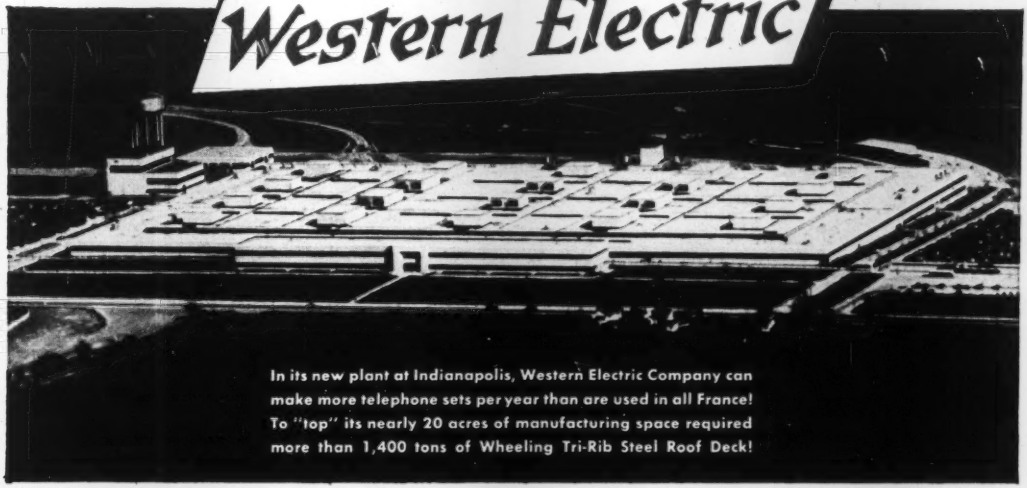
Nail-cutting saw blade

Blade for portable saw machines is recommended for cutting materials containing common nails. It cuts by milling action and will cut through most building materials. According to

(Continued on page 138)

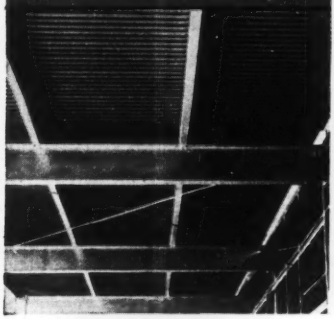
A ROOF DECK OF STURDY STEEL FOR

Western Electric



In its new plant at Indianapolis, Western Electric Company can make more telephone sets per year than are used in all France! To "top" its nearly 20 acres of manufacturing space required more than 1,400 tons of Wheeling Tri-Rib Steel Roof Deck!

IT'S LIGHTER!

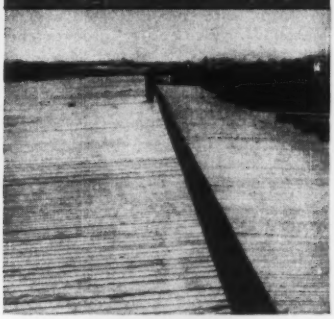


Wheeling Tri-Rib Roof Deck saves weight two ways: because of the lightness of the sheets themselves, and because the smaller dead load of the roof permits lighter supports.

IT'S FASTER!

Tri-Rib Sheets save time, too — through easy handling, and quick fastening by welding or clipping. The Tri-Rib method also requires less time out due to bad weather.

IT'S LOWER-COST!



A Tri-Rib roof costs less. Saves money too, in allowing lighter supports. Made of Cop-R-Loy, Tri-Rib is designed to specifications adopted by A.I.S.I. for light gauge structures.

Build with Wheeling Tri-Rib Steel Roof Deck!

For complete data, consult Sweet's Files or write us.

WHEELING CORRUGATING COMPANY

WHEELING, WEST VIRGINIA

ATLANTA BOSTON BUFFALO CHICAGO COLUMBUS DETROIT KANSAS CITY
LOUISVILLE MINNEAPOLIS NEW ORLEANS NEW YORK PHILADELPHIA RICHMOND ST. LOUIS

Wheeling

A COMPLETE AND "UNBEATABLE" METHOD

For new construction . . . for repairs and additions . . . for almost every kind of piping job, Victaulic is your best solution. With Victaulic you get a COMPLETE method of piping construction that just can't be beat! Here's why . . .

Victaulic's the EASIEST WAY TO MAKE ENDS MEET! The Victaulic System of Full-Flow Elbows, Tees and other Fittings offers complete versatility . . . makes joining those pipe ends quick, easy, and economical. A simple two-bolt coupling brings pipe ends together in a jiffy, a speed or T-wrench is the only tool required. With the Victaulic method joints STAY positive-locked . . . leak-proof even under extreme pressure, vacuum, or strain conditions.

Preparing pipe ends is a cinch with Victaulic . . . "Vic-Groover" grooves 'em automatically, twice as fast as a conventional pipe threader!

With the Victaulic method no special skill or training is required AND a great deal of time, work, and money can be saved on piping construction and maintenance.

Make your next piping job ALL VICTAULIC. Write today for Victaulic Catalog and Engineering Manual No. 44-8D.

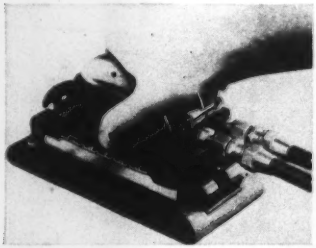
NOTE VIC'S NEW COMBINED MAIN OFFICE AND PLANT ADDRESS BELOW—

VICTAULIC COMPANY OF AMERICA
1100 Morris Avenue, Union, N. J.
Mailing Address: Box 509, Elizabeth, N. J.
Phone: Elizabeth 2-3640
Victaulic Inc., 727 W. 7th St., Los Angeles 14, Calif.
Victaulic Company of Canada, Ltd., 406 Hopewell Ave., Toronto 10
For Export outside U. S. & Canada: PIPECO Couplings & Fittings, Pipe Couplings, Inc., 30 Rockefeller Plaza, New York 20, N.Y.
27TH VICTAULIC YEAR

The easiest way to make ends meet
VICTAULIC
PIPE COUPLINGS AND FITTINGS

Copyright 1951, by Victaulic Co. of America

the manufacturer, smoothness of cut is maintained even when nails are encountered.—THE CARBIDE SAW & TOOL CO., 327 S. LASALLE ST., CHICAGO 4, ILL.



Air-driven sander

Straight-line-action single-pad sander is air-powered. Straight-line action is said to leave no swirls or pressure marks. It operates wet or dry, and can be used over both flat or curved surfaces.—SUNDSTRAND MACHINE TOOL CO., PNEUMATIC DIV., ROCKFORD, ILL.

Electric bin vibrators

Semi-noiseless vibrators are recommended for interior bins, hoppers, and chutes. Reduction in operating noise is accomplished by substituting rubber bumpers for metallic striking parts. The vibrators are available in four models. Variable controller permits regulation of intensity of vibration.—SYNTRON CO., 328 LEXINGTON AVE., HOMER CITY, PA.

New Product Briefs

Flame failure safeguard features a photoelectric cell that "sees" all types of flames. Made by: Combustion Control Corp., Cambridge 42, Mass.

Glasfab membrane for use with asphalt coatings in waterproofing, roofing maintenance, tank and pipe-protection work is now distributed by: The Flintkote Co., New York 20, N. Y.

Plastic welding cover plate resists pitting from weld spatter and provides added impact protection to welding filter plates. Made by: General Scientific Equipment Co., Philadelphia 32, Pa.

Air filter eliminates dust and dirt in central heating, ventilating, and air conditioning systems. It is an impingment-strainer type. Made by: Glasfloss, New York, N. Y.

When you specify Amcreco creosoted products for a construction job you automatically inject *long-life* and *low-maintenance costs* into that project. You get the advantage of low first cost, too, with Amcreco products.

The treating methods used by Amcreco are proved methods, *improved* by continuous research and development . . . your assurance of longer lived products. Get the complete Amcreco story today.

with . . .

Amcreco
Lowry Process
Creosoted
Products

AMERICAN CREOSOTING COMPANY
INCORPORATED

COLONIAL CREOSOTING COMPANY INCORPORATED

AM CRE CO

GEORGIA CREOSOTING COMPANY INCORPORATED

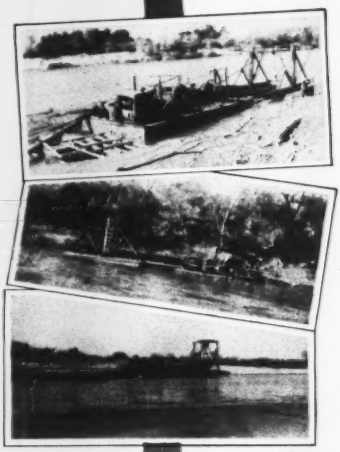
ADDRESS INQUIRIES TO CHICAGO, ILL., OR LOUISVILLE, KY.

ADZED AND BORED CROSS TIES
SELECT TIES • PILES • TIMBERS

Pressure treated for strength that lasts!

THREE dredges owned by Blue River Sand & Gravel Co., Irving, Kan., all equipped with Eagle "Swintek" Dredging Ladders, are shown. They report that production was tripled! The Blue River abounds in rocks. Shut-downs, caused by rocks in suction lines, were frequent before the "Swinteks" were installed. Also, the ratio of solids to water pumped was greatly increased because of the agitation of sand and gravel in the pumping zone. The cutter bars mounted at intervals on the screening chain of the "Swintek" really stir things up. Where clay strata are encountered the "Swintek" chews through to get at the sand.

Blue River Sand & Gravel installed a 10" - 35' Swintek Ladder in 1944. It is shown working just north of Blue Rapids, Kan. A second unit—a 10" - 40' "Swintek" was installed in 1945. It is shown working in the Blue River South of Irving, Kansas. The third unit installed in 1946—a 10" - 30' "Swintek"—is shown operating in the Blue River just south of Blue Rapids. All three are light duty models and all three dredges have 8" Amsco Dredge Pumps with 10" suction line and 8" discharge. Bulletin 745 tells the whole "Swintek" profit story.



Serving You Since 1872

Log Washers, Screw Washers, Classifiers, Dehydrators, "Swintek" Dredging Ladders, Water Sealing Tanks, Cinder Crushers and Grinders for Concrete Products Plants, Shale Planers, Pile Drivers, Breaker Rolls.

EAGLE IRON WORKS
187 Holcomb Ave.
Des Moines, Iowa

"GUNITE" CONCRETE
(Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

GUNITE CONCRETE & CONST. CO.
1301 Woodswether Rd., Kansas City 6, Mo.

District Branch Offices

S. T. Burton Co., 228 N. LaSalle St., Chicago 1, Ill.
George R. Lewis Co., 2036 Queen Ave. S, Minneapolis 5, Minn.
B. H. Mueller Co., 6825 Delmar Blvd., St. Louis 5, Mo.
Ole K. Olsen Co., 823 Perdido St., New Orleans, La.
Phillip D. Barnard, 2036 Addison, Houston 5, Tex.
Western Steel Prod. Co., 1755 W. 13th Ave., Denver 4, Colo.

MOTT Diamond Core Drilling Contractors

FOUNDATION TESTING
for
Bridges, Dams, Heavy Structures
PRESSURE GROUTING

MFR'S DIAMOND & SHOT CORE DRILLS, GROUT MIXING MACHINES, PACKERS AND GROUT PUMPS

MOTT CORE DRILLING CO.
HUNTINGTON, W. VA.

MANUFACTURERS' PUBLICATIONS

Truck mixers—Bulletin covers the complete line of Rex Hi-Discharge Moto Mixers. Improvements described in detail include the chain-drum drive system, drop-forged and flame-hardened drum rollers, locomotive-type drum track, re-located water pump, spouting equipment, and lighter-weight frame.—CHAIN BELT CO., DEPT. PR, 1633 W. BRUCE ST., MILWAUKEE 4, WIS.

Sewer failures—Bulletin entitled "Help Prevent Sewer Failures Before They Happen" shows how Armco corrugated metal sewer structures help avoid sewer failures. Inspection reports on Armco structures are a feature of the bulletin. Specifications and installation data are listed, as are pointers on how to repair failing sewers.—ARMCO DRAINAGE & METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

Plywood construction—Best methods for easy installation of plywood are listed in an illustrated brochure. It describes the erection of room panels, roof and wall sheathing, and interior and exterior grade Weldtex. It also explains the proper use of moldings, Weldwood glue, Firzite, Satinlac, and Westinghouse Micarta.—UNITED STATES PLYWOOD CORP., 55 W. 44TH ST., NEW YORK 18, N. Y.

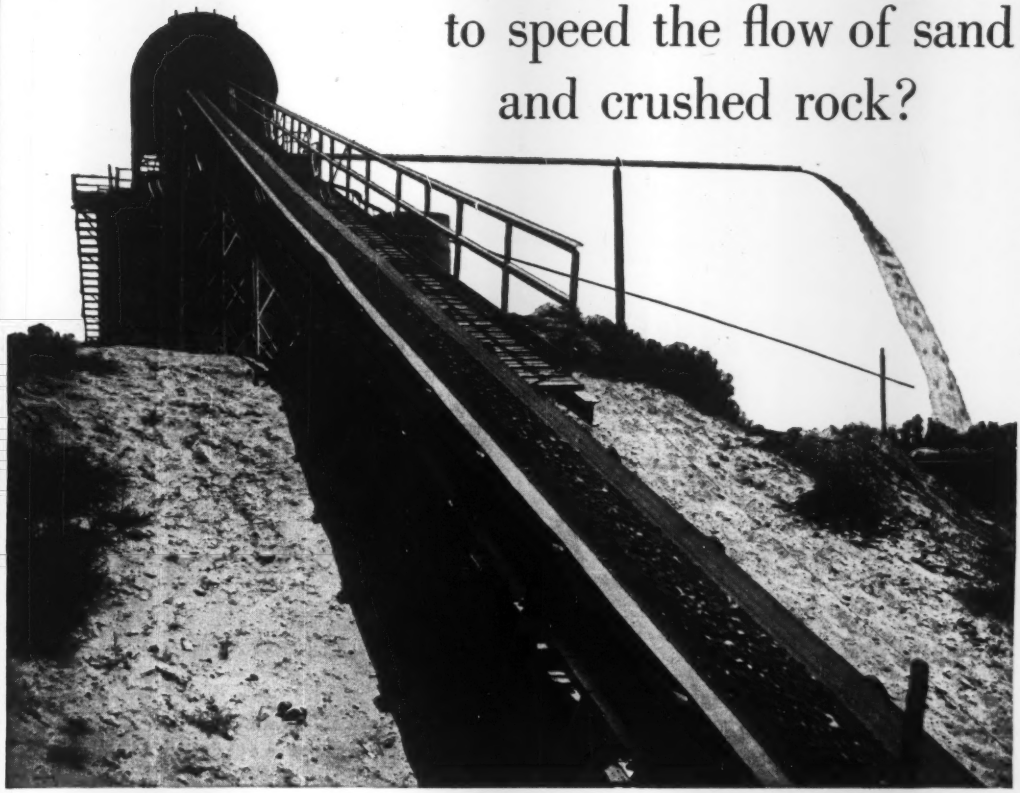
Concrete cribbing—Illustrated brochure presents case histories of both open and closed-face cribbing. Drawings show typical wall sections of varying lengths. Engineering specifications and instructions are included, together with several photos of cribbing manufacture and actual installations. Principal advantages are discussed in detail.—UNIVERSAL CONCRETE PIPE CO., 297 S. HIGH ST., COLUMBUS, OHIO.

Water softeners—Bulletin 4530 (16 pp) describes a hydrogen zeolite (cation exchange) water softener. It contains a complete description of the process and its field of application, and lists principal advantages. Also described are zeolites themselves, and details of the equipment used.—COCHRANE CORP., 17TH ST. & ALLEGHENY AVE., PHILADELPHIA 32, PA.

Forests and wood supplies—Comprehensive brochure presents an interesting story of forests and wood growth and use. It contains informa-

(*Continued on page 143*)

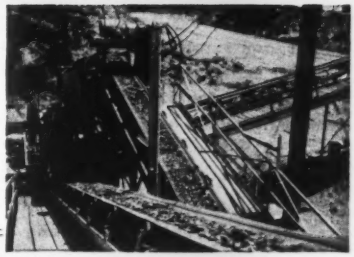
What's U. S. Rubber doing to speed the flow of sand and crushed rock?



Throughout this quarry, many sizes of U. S. Giant Conveyor Belts are transporting pit-run sand and crushed rock. These conveyors go uphill, downhill, and on the level. They never get tired, are never hampered by the weather or their rough, heavy cargo.

"U. S." moves bulk materials at minimum costs because "U. S." scientific testing and rigid inspection assure maximum operating efficiency. Whatever your belt problem, put it in the hands of U. S. Rubber's belting specialists. Write to address below.

PIT-RUN SAND conveyed by U.S. Giant Conveyor Belt. Crosswise flexibility of "U.S." belts assures proper training.



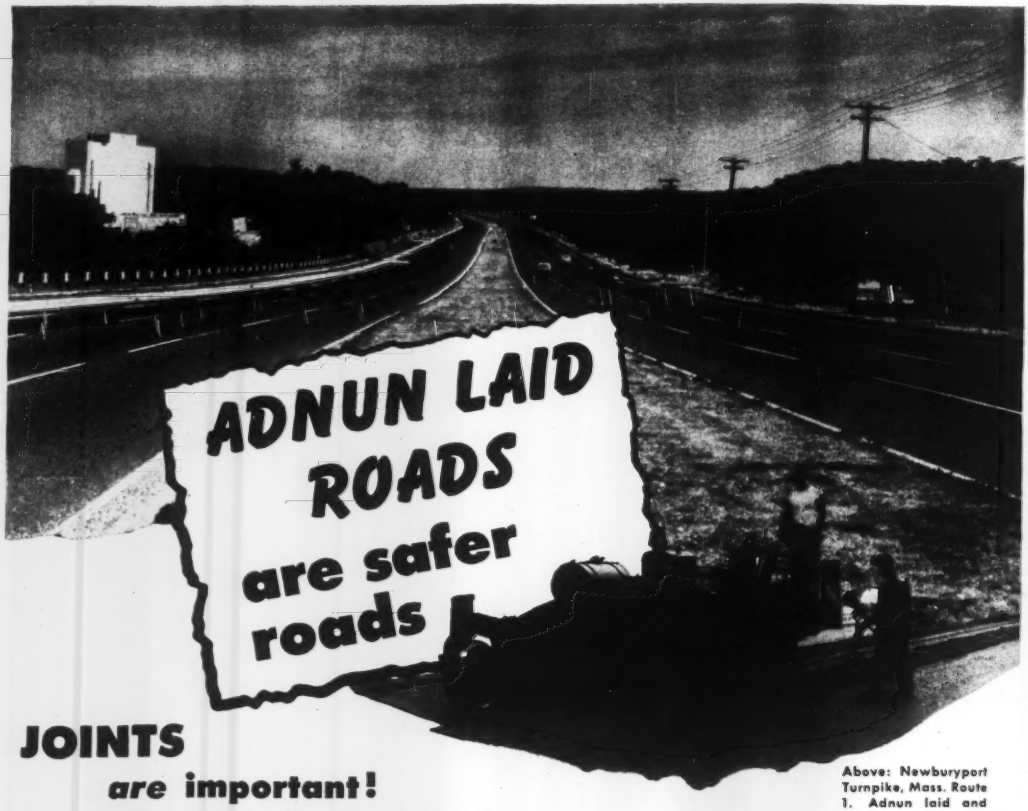
TWO VIEWS of other U.S. Giant Conveyor Belts transporting crushed rock through the various stages of processing.

PRODUCTS OF

U.S.RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.



JOINTS
are important!

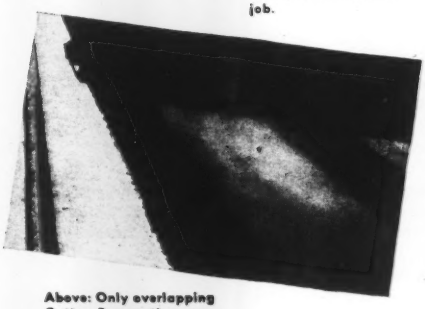
IN this day of the increased use of asphalt on high-speed, multi-lane roads, tight, smooth joints mean safer roads.

The Adnun is the only black top paver that makes a tight joint automatically. The oscillating overlapping Cutter Bar carries the material up against the parallel course or curb and compacts it in place. It is not dependent on the eye or human judgment. It is level, tight and positive—a safe joint that will not throw a car off its course or leave thinner spots where breakdown can begin.

This is only one of the many Adnun advantages that has been responsible for the long life of heavily traveled Adnun laid roads. If you don't have them ask for the booklets "Roads That Last" or "11 Basic Things . . ." They tell an interesting story.

Above: Newburyport Turnpike, Mass. Route 1. Adnun laid and traffic loaded since 1936, 15 years ago.

Lower: Joints are going to be tight and safe on this three lane job.



Above: Only overlapping Cutter Bar action can produce a joint like this. No raking or hand work is necessary.

THE FOOTE COMPANY, INC.
Subsidiary of Blaw Knox Co.
1922 State Street Nunda, New York

ADNUN TRADE MARK REGISTERED **BLACK TOP PAVER**

tion on various terms used in describing wood; lists the trend of the nation's wood supply; and discusses the various factors involved in maintaining an ample wood supply.—AMERICAN FOREST PRODUCTS INDUSTRIES, INC., 1319 EIGHTEENTH ST., N. W., WASHINGTON 6, D. C.

Plastic-faced plywood—Catalog is designed as a reference manual for plastic-surfaced plywood. It describes types of plastic-surfaced Douglas fir plywood, properties of the overlay panels, and lists applications in construction and industry. Recommendations are included for use of a new premium-surface panel material that combines the properties of fir plywood and plastics.—DOUGLAS FIR PLYWOOD ASSN., TACOMA BLDG., TACOMA 2, WASH.

Joints and fittings—Complete line of pipe joints and fittings is listed in this 4-pager. It describes the Style 38 couplings in detail listing features of construction and installation. Installation procedures are listed step-by-step with photographs showing proper procedure. Compression fittings for permanently tight flexible joints for small piping are also described in detail.—DRESSER MFG. DIV., DRESSER INDUSTRIES, 21 FISHER AVE., BRADFORD, PA.

Glass handbook—Data sheet handbook contains detailed information on the complete line of Pittsburgh glass and glass products. It is a revision of a loose-leaf handbook issued in 1947 and includes several important changes. It is a pocket-size book designed for ready reference.—PITTSBURGH PLATE GLASS CO., 632 DUQUESNE WAY, PITTSBURGH, PA.

Arc welding—History of the oxy-acetylene flame is traced in this 16-p illustrated booklet. Written in easy-to-understand language, it explains uses of the oxy-acetylene flame in cutting, welding, and heating operations. Specialized uses, such as hardfacing, flame-softening, flame hardening, powder cutting, and steel conditioning, are briefly described—LINDE AIR PRODUCTS CO., DIV. UNION CARBIDE & CARBON CORP., 30 E. 42ND ST., NEW YORK 17, N. Y.

Expansion joints—Four-page bulletin describes a complete line of expansion joints. Bulletin 351 lists sizes, dimensions, suggested applications, and other technical data on a variety of joints. The line ranges from small flexible connectors for diesel exhaust lines to 30-ft-dia self-equalizing joints. —ZALLEA BROS., TAYLOR & LOCUST STS., WILMINGTON 99, DELA.

ADVERTISERS IN THIS ISSUE

Adams Mfg. Co., J. D. 11
Air Placement Equipment Co. 109
Air Reduction Sales Co. 53
Alemite Div., Stewart-Warner Corp. 89
American Bridge Co. 111
American Creosoting Co. 139
American Steel & Wire Co. 64, 65
Ameriaux Steel Products Corp. 75
Armco Drainage & Metal Products, Inc. ..... 2nd cover
Atlas Powder Co. 32
Autolene Lubricants Co. 14, 15

Barco Mfg. Co. 96
Baxter Co., J. H. 135
Belmont Iron Works 105
Bethlehem Steel Co. 104
Blaw Knox Div., Blaw Knox Co. 54, 72, 73
Broderick & Bascom Rope Co. 69
Buchanan Lumber Co. 105
Butler Mfg. Co. 61
Byers Co., A. M. 132

Cement Gun Company 48
Chain Belt Co. 77
Cleaver Brooks Company 13
Clow & Sons, James B. 107
Clyde Iron Works, Inc. 20
Cole Mfg. Co., R. D. 101
Complete Machinery & Equipment Co. 76
Concrete Reinforcing Steel Institute 46
Cook Bros. Equipment Co. 110

Dewey & Almy Chemical Co. 56
Dixie Cup Co. 68
Duncan, K. O. 10

Eagle Iron Works 140
Eimco Corp., The 103
Electric Tamper & Equipment Co. 54
Erie Steel Construction Co. 102

Flintkote Co., The 63
Foote Co., Div., Blaw-Knox Co. 142
Foster Co., L. B. 51
Fruehauf Trailer Co. 60
Galion Allsteel Body Company 100
Goodrich Company, The B. F. 1
Griffin Wellpoint Corporation 105
Grinnell Company, Inc. 134
Gunite Concrete & Construction Co. 140
Gunite Construction Company 75

Heltzel Steel Form & Iron Company 84
Hetherington & Berner, Inc. 58
Hewitt-Robins Inc. 78
Homelite Corp. 37

International Harvester Co. 86, 87
International Steel Company 59
Irving Subway Grating Co. 88
Irvington Form & Tank Corp. 75

Jenkins Bros. 66
Johns-Manville Corp. 90, 91
Josam Mfg. Co. 50
Joy Mfg. Co. 74

Koppers Co. 79

La Crosse Trailer Corp. 12
LeTourneau, Inc., R. G. 81
Leupold & Stevens Instruments, Inc. 2
Link Belt Speeder Co. 112
Lock Joint Pipe Co. 85
Lone Star Cement Corp. 18

Marlow Pumps 94
McGraw-Hill Book Company 52
McKiernan-Terry Corp. 106
Merritt-Chapman & Scott Corp. 67
Michigan Power Shovel Co. ..... 3rd cover
Mott Core Drilling Co. 140
Nordberg Engineering 93
Northwest Engineering Company 3

Ohio Locomotive Crane Co. 58
Omega Machine Co. 45

Peerless Pump Div., of Food Machy., Corp. 115
Pennsylvania Drilling Co. 88
Permutit Co., The 5
Pittsburgh Corning Corp. 55
Pittsburgh-Des Moines Steel Co. 99
Pressure Concrete Company 94

Raymond Concrete Pile Co. 4
Rockwell Mfg. Co. 57
Russell Burdsall & Ward Bolt & Nut Co. 108
Ryerson & Sons, Inc., Jos T. 16

Sauerman Bros., Inc. 48
Schield Bantam Co. 9
Schramm, Inc. 8
Sisalkraft Co. 71
S K F Industries, Inc. 95
Sparling Meter Co. 80
Spencer, White & Prentis, Inc. 101
Sprague & Henwood, Inc. 58
Stang Corp., John W. 80
Stanley Electric Tool Div. 70
Stone & Webster Engineering Corp. 41

Texas Company 6, 7
Timber Engineering Co. 76
Timken Roller Bearing Co. ..... 4th cover
Tinney Drilling Company 94
Trailer Village, Inc. 105
Trinity Portland Cement Div. 98

U. S. Rubber Co. 141
U. S. Steel Co. 82, 83
United Steel Fabricators, Inc. 97
Universal Atlas Cement Co. 22

Victaulic Co. of America 138
Vulcan Iron Works 47

Waukesha Motor Co. 49
Wheeling Corrugating Company 137
White Co., David 136
Williams Co., J. H. 89

Professional Services 131

SEARCHLIGHT SECTION

(Classified Advertising)

Employment
Positions Vacant 120, 121, 122
Civil Service 120
Selling Opportunities Offered 120
Positions Wanted 122
Employment Agencies 120
Employment Services 120

Special Services
Contract Work 122
Erection 122

Educational
Schools 122

Business Opportunities
Offered 122

Notices
Proposal 117, 118, 119

Equipment
(Used or Surplus New)
For Rent 131
For Sale 122, 131
Piling 129
Pipe 131
Rail 130
Surveying Instruments 128

Wanted
Equipment 128

ADVERTISERS INDEX 128

ENGINEERING NEWS-RECORD

E. E. WEVENETH, *Manager* — HOWARD T. OLSEN, *Assistant Manager*

J. G. HENSON, *Business Manager*

Sales Representatives: D. S. Robertson and E. A. Callahan, Jr., 330 W. 42nd St., *New York;* F. G. Hudson, L. H. Hunt, W. G. Payne, 520 N. Michigan Ave., *Chicago;* J. W. Otterson, R. E. Dorland, 68 Post St., *San Francisco;* A. B. Cozzens, 17th & Sansom Streets, *Philadelphia;* E. E. Duff, Jr., Hanna Bldg., *Cleveland;* B. F. Horn, Penobscot Bldg., *Detroit;* W. E. Donnell, Continental Bldg., *St. Louis;* H. L. Keeler, 1111 Wilshire Blvd., *Los Angeles;* R. C. Maultsby, Rhodes-Haverty Bldg., *Atlanta;* J. H. Allen, Jr., First National Bank Bldg., *Dallas. Other Sales Offices:* 738-39 Oliver Bldg., *Pittsburgh;* 1427 Statler Bldg., *Boston;* Aldwych House, *London.*

Letter from JACKSONVILLE

Father Time and quick-rising costs present local building men with riddle: How to build faster than soaring prices

Public planners from coast to coast face problems of mounting material costs and shrinking labor supplies. In Jacksonville it is no different. But here city officials find that speed in execution of public works offsets the inflationary spiral and gets projects built despite a Navy-sapped construction labor supply.

Where Jacksonville officials have been slowed by legal or planning problems, money raised for large projects on the basis of pre-Korean estimates has been inadequate. Where civic plans were expedited, much of the cost problem has been dodged by city officials.

Experience on public work here proves that speed in awarding contracts allows less time for inflationary pressures to get in between work and financial planning. This shifts the burden to contractors.

Just an example or two: The city's waterworks program, already well underway, has not had any large increase in overall cost. Most contracts have already been let on the job. By contrast, the city's school building program and great Jacksonville Expressway are in trouble due to time lapses between conception, financing and work starts.

• **Schools hard hit**—Schools may be hit hardest by cost increases. Under the school program of District No. 1 (including all of Duval County, in which Jacksonville is located) $14,500,000 is to be spent on 66 projects. According to pre-Korea estimates, this money should be enough to pay for 606 class rooms, plus auditoriums, gymnasiums and cafeterias in 22 new school buildings and 44 additions. Today, even with scaled down plans funds may not be adequate.

In 1948, construction costs for elementary schools were about $8 per sq ft, $0.72 per cu ft or $600 per pupil. When the current school program was estimated in 1949, costs were figured at $8.50 per sq ft. But in 1951, costs are running about $9 per sq ft. (These figures do not include the cost of land, equipment or architects' fees.)

In Oct., 1949, District 1 floated a $12,000,000 bond issue, anticipating a contribution of $2,500,000 from the State. The issue sold for 1.876%—lowest rate in the district's history. Had construction started immediately, there would have been no problems, but a citizen's suit delayed validation of the issue until the Korea War started.

To get the most for available funds, the Board of Public Instruction is awarding contracts as speedily as possible, before costs go much higher. At present, 28 projects are in the planning stage and 12 under construction, including three new school buildings. The objective is to award contracts at a rate of one or two per week, so that by the end of the year, 90% of the initial program may be designed or under construction.

• **Building details**—The new elementary schools are one-story, flat-roofed structures, with classrooms housed in long, narrow wings. Placed on both sides of a 10½-ft wide corridor, these rooms are 25 ft wide and from 36 to 41 ft long. Generally, they are designed for 30 pupils. They have all-glass chalkboards with aluminum trim, acoustical-tile ceilings, incandescent lighting and radiant heating in the concrete floors. Interior wall surfaces are painted concrete block. Floors are asphalt tile.

Schools are designed by private architects, who draw the plans and provide general advisory supervision. Peter de Groot is construction supervisor for the board.

• **Expressway jeopardized**—Another program that may run out of funds before its completion is the Jacksonville Expressway system. Pre-Korean estimates of the State Improvement Commission were at $42 million (ENR Sept. 28, 1950, p. 30). But project cost is now estimated at $50,000,000—and Richey Green, the road department's engineer of urban projects, has just cause for concern.

Designed to speed traffic from all directions into and through the city, the expressway is to consist of 42 miles of highway and three big bridges. It will vary in width from two to eight lanes. At present, only Arlington Bridge and a short length of 6-lane pavement in south Jacksonville are building.

Carrying four lanes of traffic over St. John's River at the eastern edge of the city, the $11,300,000 Arlington Bridge will be 7,375 ft long. The main span will be a 810-ft cantilever truss, providing 149½-ft clearance over the channel. Merritt, Chapman & Scott is building the substructure, Bethlehem Steel Co., the superstructure.

Next bridge to be started will be the 3,667-ft long, 4-lane Gilmore St. Bridge over the St. John's River, between north and south Jacksonville. It will feature continuous girder and truss spans and an electrically operated double-leaf bascule with a 174-ft clear opening. A $1,179,668 contract for building the substructure was awarded in April to Diamond Construction Co., Washington, D. C. Bids on substructure and superstructure combined failed on two occasions to come within the State Road Dept. estimate, largely due to excessive unit prices for structural steel.

The third bridge—Myrtle Ave. overpass—will carry six lanes of traffic over a railroad yard. This structure is still in the design stage.

Reynolds, Smith & Hills, of Jacksonville, and Parsons, Brinckerhoff, Hall and Macdonald, of New York City, are consulting engineers.

• **Waterworks program unhurt**—In contrast, the city's $7,000,000 expansion of the water-supply system does not appear to be endangered by cost increases. The Department of Electric and Water Utilities is spending $7,000,000 – $2,000,000 out of accrued funds, $5,000,000 from a bond issue. Construction contracts were awarded beginning in early 1949—for a while at a rate of one a week. Now, about $4,900,000 of work is under contract.

Jacksonville is one of the few U. S. cities completely supplied with water from artesian wells.

The north and south sections of the city, which are separated by St. John's River, have separate water-supply systems. Expansion of these systems under the initial program includes new cast-iron distribution lines, new wells, new ground storage reservoirs, new aerators and new pumping stations. Elevated tanks are being constructed with pay-as-you-go funds. Still to be built are more elevated tanks and additional distribution lines.

Reynolds, Smith & Hills, consulting engineers, made the engineering studies and prepared plans and specifications.

EVER WIN A COMPETITIVE BID BECAUSE OF A TRUCK CRANE?

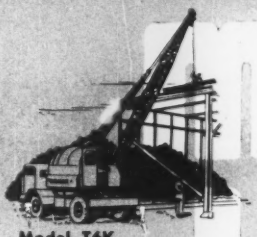
Here's one contractor who did! As an example of the advantages inherent in MICHIGAN Truck Cranes, Mr. Gurtzweiler of Henry Gurtzweiler, Inc., Toledo, cited a competitive-bid job.

Other contractors figured on the necessity of using a large crane with long boom to reach from outside a building being erected. Gurtzweiler, taking advantage of his MICHIGAN'S compact size and maneuverability, planned to work from a central point *inside* the building. Result? Henry Gurtzweiler, Inc. got the job . . . another of the many on which the MICHIGAN has given them a competitive advantage.

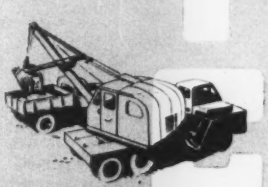
Moreover, Mr. Gurtzweiler states that although the truck crane is five years old and never has had an idle day, it is still in perfect condition and has had very little maintenance. Why settle for less? Next time you need a truck crane . . . get a MICHIGAN!

MICHIGAN POWER SHOVEL COMPANY

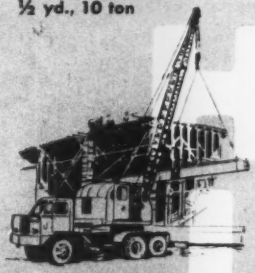
500 Second Street, Benton Harbor, Michigan, U. S. A.



Model T6K
¾ yd., 6 ton



Model TMDT-16
½ yd., 10 ton



Model TLDT-20
12 ton

Series 8
½ yd., 8 ton

Model C-16
½ yd., 8 ton

Tournadozer on TIMKEN® bearings moves 94.5 yards an hour on 321-foot push

WHEN 105,000 tons of gravel were needed for highway construction near Orem, Utah, the big problem was moving gravel from pit to mix plant fast enough for steady output. The problem was solved when a Timken® bearing equipped Super C Tournadozer was put on the job. It moved 94.5 yards of gravel an hour on a 321-foot, 1-way push from pit to plant!

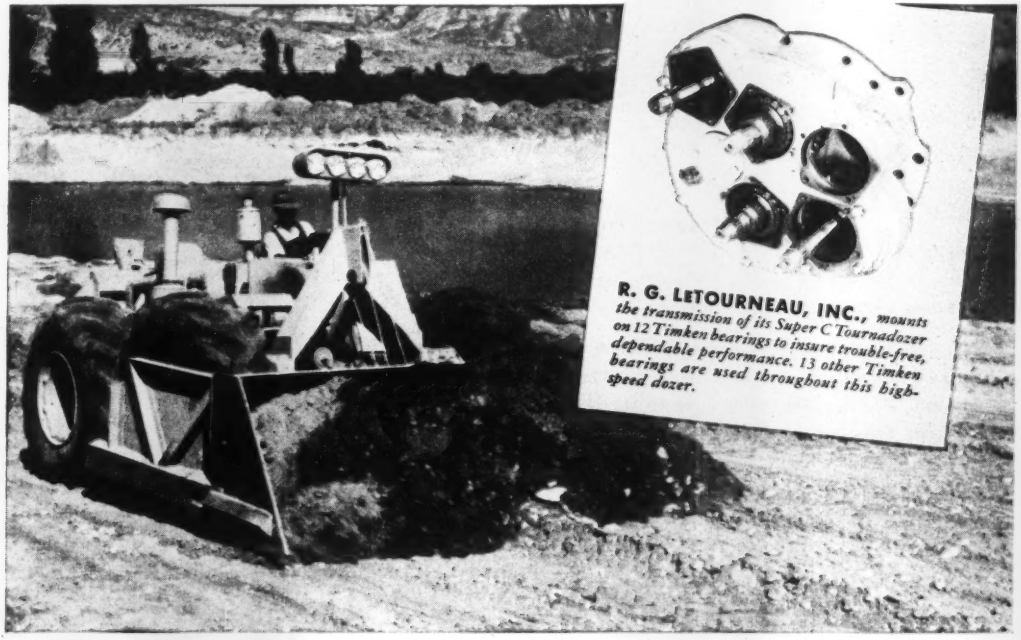
Built by R. G. LeTourneau, Inc., the high-speed Tournadozer uses 25 Timken tapered roller bearings to insure fast operation, long life and trouble-free performance. Timken bearings in the transmission keep gears and shafts in alignment, reduce wear, assure a smooth flow of power. And because they're mounted on Timken bearings, the dozer blade control and scraper attachment gear boxes take the heavy loads easily. Maintenance and lubrication are reduced.

Tapered construction enables Timken bearings to take any combination of radial and thrust loads. Line contact between rollers and races gives extra load-carrying capacity. True rolling motion plus an incredibly smooth surface finish makes friction negligible. And tight, lubricant-retaining closures keep out damaging dirt and moisture, keep the lubricant in.

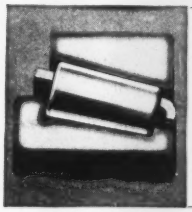
Timken bearings are made of the finest steel ever developed for tapered roller bearings—Timken fine alloy steel, are engineered for the job and precision manufactured—three reasons why Timken bearings normally last the life of the machine.

No other bearing can give you *all* the advantages you get with Timken bearings. That's why bearings with the trade-mark "Timken" are industry's No. 1 choice. Insist on them when you buy. Specify them when you build. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



R. G. LETOURNEAU, INC., *mounts the transmission of its Super C Tournadozer on 12 Timken bearings to insure trouble-free, dependable performance. 13 other Timken bearings are used throughout this high-speed dozer.*



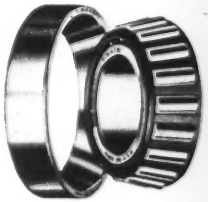
GREATER LOAD AREA

Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer. The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

TIMKEN

TRADE MARKS REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ⊂⊃ THE TIMKEN TAPERED ROLLER ⊂⊃ BEARING TAKES RADIAL AND THRUST ←○→ LOADS OR ANY COMBINATION ←○→